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The advertisement features a central illustration of a vintage car, likely a Packard, shown from a front-three-quarter view. The car is dark-colored with prominent round headlights and a large, ornate grille. Behind the car, a large, light-colored circular shape, resembling a palette or a stylized sun, contains two dark, abstract, human-like figures. To the right of the car, a paintbrush is shown with its tip touching the circular shape. Below the car, a decorative, ornate frame contains text. The frame is flanked by two mechanical parts, possibly door handles or hinges, one on each side. At the bottom of the frame, the company name 'TERNSTEDT' is prominently displayed in a bold, serif font, followed by 'World's Largest Manufacturer of Automobile Body Hardware' and 'DETROIT U. S. A.' with a small circular logo featuring a figure.

*Harmony of Color-
Contour-Appointments
The new trend in design..*

A new artistry in motor car appearance is definitely at hand wherein color, contour and all visible appointments are skillfully blended in a harmonious unity of design.

To those astute executives who foresee the far-reaching possibilities of this advancement, Ternstedt has an important story to relate.

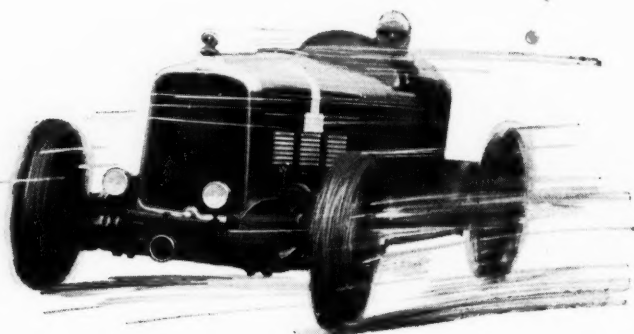
TERNSTEDT
World's Largest Manufacturer of Automobile Body Hardware
DETROIT U. S. A.

Federal Mogul Bearings have got what it takes to win!



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Bronze Washers
Bronze Castings
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A STANDARD five-passenger Stutz Sedan, fully equipped, delivered wonderful performance when it won the Stevens Trophy. A 24-hour run with an average speed of 68.44 miles per hour — and the Federal-Mogul Bearings (standard on all Stutz cars) were right all the way.

On May 7th, 1927, against a field of fourteen starters, a standard Stutz Speedster averaged 86.24 miles per hour for 75 miles, winning the Atlantic City Stock Car Race. Federal Mogul Bearings did their part there, too.

Such grueling contests demand bearings of the highest quality and workmanship. Federal-Mogul supplies them for most of the cars that win such events, and for the majority of automobile manufacturers as well.

FEDERAL-MOGUL CORPORATION
DETROIT, MICHIGAN

Federal Mogul FEDERAL

Your Reputation is Safe with Federal-Mogul — World's Largest Engine Bearing Manufacturers

Hand-to-Mouth Buying

WHAT Has It Done — and WHAT Will It Do?

*"Controlled purchasing" a real benefit to automotive industry,
but too short commitments will work hardships on all concerned.*

By K. W. Stillman



SO-CALLED hand-to-mouth buying has developed rapidly in recent years and has brought about important changes in manufacturing and distribution methods. Particularly is this true in the automotive industry where relationships between vehicle factories and dealers have undergone considerable alteration due mainly to this development and where quite notable changes have been made in the buying and selling practices of manufacturers of vehicles, parts and accessories and the firms which supply them with raw materials and finished or semi-finished parts.

Because of its effects upon all members of the industry it is of interest to analyze just what hand-to-mouth buying is, what its net results have been or will be and whether or not it may be expected to continue to exert the same influence in the future as it has in the recent past.

The choice of the term hand-to-mouth buying to describe the present conservative purchasing policy of most concerns is not, after all, a particularly happy one. It seems to connote an extreme application of principles which, followed sanely, are likely to be of real value. Hand-to-mouth buying, as it is often practiced in the automotive industry, does not mean that all purchases are made literally at the last possible moment any more than that forward commitments for a year's supply of material are made. What it does mean is possibly expressed better by the suggested term "controlled purchasing" in which the control is exercised mainly by actual expressed demand for the goods into which the purchased material enters.

It appears to be uncertain just what has been the fundamental cause of the rise of hand-to-mouth buying. Some see in its development the effects of the severe decline during 1920-1921 when extensive practice of methods directly opposite from those used today caused untold loss to concerns in all kinds of business. Holders of this opinion believe that business has at last learned its lesson and, at present at least, is taking no chances on getting caught again with large inventories during a rapid price decline.

To another school of thought this explanation does not suffice. According to this school, hand-to-mouth buying has been developing for a quarter century and has been based on an increasing knowledge of industrial economics which has shown the apparent fallacy in expending huge sums on inventory carrying charges or in speculating with material accounts when manufacturing has been the principal business engaged in.

Whatever the fundamental cause of hand-to-mouth buying, there is little doubt that its very rapid growth during the past few years can be pretty definitely laid to three factors.

First is the great excess of productive capacity over normal demand. This has made it possible for orders to be filled quickly and for sudden excess requirements to be met by suppliers with a minimum of delay.

Second is the downward price trend which has been apparent during the past three or four years, although there is some question whether this has been a cause or an effect of hand-to-mouth buying. Obviously, when prices are declining no business man will lay in a heavy stock of goods which may depreciate in economic value before he can make them up and sell them. But, say those who see the present movement as the culmination

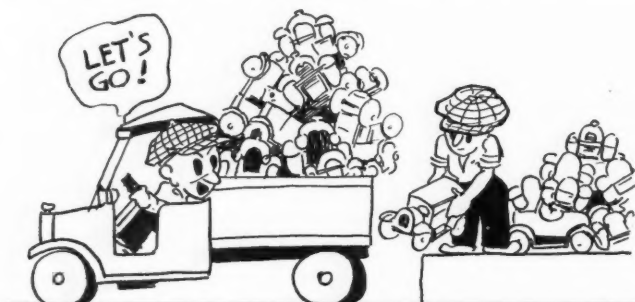
of a long time development, lower prices have been brought about through efforts of suppliers to overcome the effects of hand-to-mouth buying and who have lowered prices in the hope of stimulating larger purchases.

The third cause, and what is probably as influential as any, is the efficiency of present day transport facilities. Never in the history of the country have transportation agencies been operated so effectively as they have been during the past few years. And in this condition the automotive industry has played a very important role. The development of motor truck transport has relieved the railroads of much short haul traffic which was not only unprofitable in itself but added greatly to the congestion of equipment and terminal facilities which have now been released for long haul service.

Efficient Transport Aids

Manufacturing plants must keep in operation at all costs if they are to stay solvent, and to keep in operation they must have the necessary material required for their products when and where they want it. Whether material prices are rising or falling and whether their facilities are being fully or only partly engaged they must keep in operation. For these reasons it seems unlikely that without the resources of our very efficient transportation facilities which insure rapid and dependable deliveries, the other factors cited would have made it advisable for industry to resort to hand-to-mouth buying. Business would have had to carry larger reserve stocks in order to insure against traffic delays.

In attempting to analyze the advantages and disad-



Supply has exceeded demand for most automotive products in recent years. This condition has tended to promote hand-to-mouth buying

vantages of hand-to-mouth buying and finally to evaluate the net results of the practice there are two distinct parties to be considered whose interests are likely to be different. The buyer, represented by the dealer, the vehicle maker and the part and accessory maker, is one and the seller, represented by vehicle makers, part and accessory makers, raw material vendors and factory equipment manufacturers is the other.

To the buyers, the advantages of making small and frequent purchases are fairly obvious and include such items as less credit and capital needed, interest charges and insurance expense lowered, protection against violent price changes and changes in design, and the elimination or great reduction of storeroom expense.

All of these factors are real profit-making items and in total, have considerable effect upon the balance sheet. Another item, possibly not so evident but still important, is the elimination of speculation in materials. Under the old purchasing methods the purchasing agent often had more to do with the showing made on the profit and loss account than the production or sales manager. He was expected to be an expert in market trends and to

make most of his purchases according to market conditions rather than according to factory demand. If he anticipated a rise in the price of some commodity he might contract for several years' supply. If his forecast was correct all was well, providing developments in the industry did not make the purchased material obsolete before it could be used up. If his forecast happened to be wrong the business might suffer a loss greater than the profit made through the manufacturing operations.

This practice has long been decried by most business men. It has been maintained that a manufacturing concern should endeavor to gain its profits solely through its manufacturing operations and leave speculation in material to other agencies. Until hand-to-mouth buying became customary, however, there seemed to be no way in which the evils of this practice could be eliminated.

The advantages of hand-to-mouth buying to the seller are not so apparent but there do seem to be certain things about it which should recommend it to those who sell. This is only true, however, if buyers practice "controlled purchasing" rather than a literal application of the term "hand-to-mouth buying."

Possibly the greatest advantage is to sellers as a class, rather than to individuals, in weeding out inefficient concerns and making those which remain stronger and better organizations. To fill quickly and at competitive prices numerous small orders for goods obviously requires a much higher degree of management skill than to operate for months or for a year on a single order. This condition has brought about rapid progress in manufacturing methods which cannot help but be beneficial to the concerns which adopt them.

Perhaps this is nowhere better illustrated than in the recent experience of many vehicle manufacturers, who, in supplying vehicles to their dealers and distributors, act in the role of sellers. Not so long ago the general practice was for manufacturers to load their dealers with as many cars as they could be made to accept with the actual capacity of the dealers market to consume the shipments playing small part in the quota setting ceremonies. This practice was, in some instances, carried so far that dealers became overloaded with cars to an extent which threatened their very existence and so, of course, such a condition was finally recognized by the manufacturers as dangerous to themselves also.

Shipments were severely cut in order to permit dealers to dispose of their excess stock and in the process of reorganizing the system many manufacturers initiated a plan which has all the earmarks of hand-to-mouth buying. Where, a few years ago, more or less rigid production programs were laid for six months or a year in advance, many concerns now reschedule cars through their shops every week or two as reports of changing consumer demand are received from their wholesale and retail outlets.

Stability of Production Needed

The better control over operations which has been essential to carrying out such a plan has been as beneficial to the manufacturing plants as its results have been to the buyers of cars and the same results might well be expected by other members of the industry which take up the work with the same enthusiasm and intelligence.

The general results of hand-to-mouth buying on industry as a whole and on the country seem to have been good. At a meeting of some 250 executives of all types of business called a few months ago by the Metropolitan Life Insurance Company to discuss this very subject it

appeared to be the consensus of opinion that, in general, hand-to-mouth buying was a good thing when not carried to extremes.

Its greatest benefit was seen to be its effect upon stabilization of business, it being suggested that should the present practices be continued it would be quite impossible for similar conditions as prevailed in 1920 and



The general downward tendency of commodity prices for some time back also has encouraged hand-to-mouth buying. The question at present is, "Have Prices reached the bottom?"

1921 to result in anything like the loss and confusion then developed. Another good feature suggested is the closer relationship between buyers and sellers which must necessarily arise from present purchasing methods. As the two come to understand each other's problems more clearly nothing but good should result from the closer contacts into which they have been forced by hand-to-mouth buying.

Not all the comments on hand-to-mouth buying are favorable, however. The most serious criticism to be raised from the buyer's standpoint is that the prices of the goods he buys are likely to be higher under the present methods of purchasing than under those formerly in use. Much of the success of American industry has been built upon mass production but it is suggested as being impossible or, at best, very difficult, to attain mass production with unfilled orders on hand at any time for only a very small amount of material.

Small vs. Large Orders

The frequent placement of small orders also permits frequent changes in the detail design and construction of the goods purchased and this, too, is not at all conducive to attainment of maximum productive economies. So far, at least, it appears that while costs to the buyer may have been increased, his savings in lower inventory expenses have more than met the increase so that the net cost of the finished products have been lowered, if anything, by hand-to-mouth buying.

Another item offered against controlled purchasing is that it leaves the buyer's production program too much at the mercy of the vendor and the transport agencies. The buyers' inventories, under this plan, are usually very low, and, in fact, in some of the newer vehicle plants, storerooms have been entirely eliminated, incoming material going directly to the production line. With such conditions it is obvious that a hold-up in the vendors plant or an unusual delay in transportation might have serious effects upon the production program.

As suggested before, with the present large excess productive capacity coupled with the very efficient control methods employed throughout the automotive industry, suppliers of goods have been able, pretty generally, to meet the shipping demands of their customers.

Transportation facilities operate at so high a degree of effectiveness that under the control of a capable traffic manager, who, incidentally occupies a much more im-

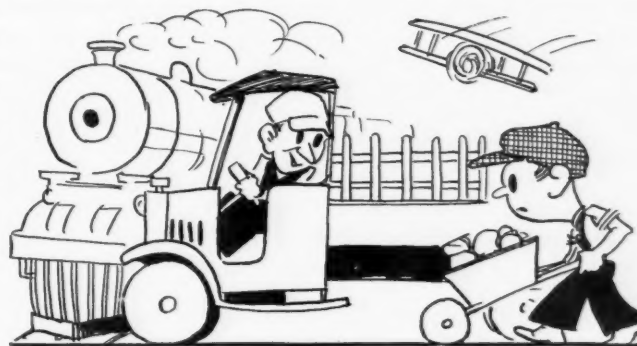
portant place in his organization than he once did, freight delays are seldom serious.

To sellers, hand-to-mouth buying offers very serious objections unless the buyers consider the problems of the seller in placing orders, and such considerations frequently have not been shown in the automotive industry. Frequent orders for small quantities of goods constitute a very difficult manufacturing problem and when this is accompanied with demands for very quick deliveries and low prices it becomes a task which only the exceptional and best organized suppliers can cope with and continue to make money.

Makers of automotive parts and accessories, for example, have so far discovered small benefit in hand-to-mouth buying. Too often, vehicle manufacturers have seen in hand-to-mouth buying simply a means by which they might reduce their own costs by placing the entire burden of carrying finished parts inventory upon their suppliers, instead of viewing the practice as one in which close cooperation between buyer and seller would result in the greatest good for all.

When vehicle manufacturers delay their orders for parts to the last possible moment and then place them for quantities too small to permit the economies of mass production they are hurting themselves basically as well as the part makers for, if such practices continue, prices must inevitably increase or quality of products decrease if the part makers hope to continue in business. And unless enough part and accessory makers can continue operating profitably in the automotive field to supply real competitive conditions, the vehicle makers stand to lose in the long run.

There probably is no expectation on the part of anyone that any members of an industry are going to forego the opportunity of making a saving in cost for the single reason that to do so may possibly injure someone else. But in the automotive industry particularly, the various members are so closely related in their interests that it is scarcely possible that one part could be injured without having serious effects upon the other parts. In view of this it appears that the plea of parts and accessory makers that vehicle plants place orders for large enough quantities of material so that the



The rapidly growing efficiency of various transportation means has made possible effective buying on shorter commitments than used to be possible

economies of mass production can be obtained and that they be placed far enough in advance of requirements so that production programs need not be entirely disrupted by every new order is one which would be of advantage to vehicle makers to heed.

The automotive industry has built its success very largely upon the fact that it has been able to apply mass production methods to its problem to a greater extent than has any other industry. With the proved worth of

this practice as evidenced by the present prosperity of the industry known to all, it would appear to be a highly speculative proceeding to adopt any practices which, for the sake of saving a few more pennies in inventory charges, would make it impossible for a large portion of the industry to continue operating as mass producers.

Hand-to-mouth buying has called forth considerable discussion during recent months and although there has been no entire agreement as to its net results, a few things appear to be quite generally accepted.

The first item of importance is that neither production nor consumption has been adversely affected by hand-to-mouth buying as is well evidenced by the record of 1926 during which both factors compared favorably with any previous year, although hand-to-mouth buying had been generally practiced throughout the period.

Inventories Affected

The second item, and one which is of particular interest to the financial world, is the release of credit made possible by hand-to-mouth buying. Dealers no longer have such large stocks of cars or of accessories to finance but have shoved part of their financing burden back on wholesalers and manufacturers. Wholesalers have relieved themselves at the expense of manufacturers and the latter have transferred some of their load to their suppliers. Thus, with few exceptions, the chain has continued back to the basic raw material suppliers who now must carry a much larger share of the financing burden than before. There may be the same physical amount of goods being financed as before but since a much larger share of it is carried in the raw or semi-finished state the credit problem has been greatly relieved.

In some cases hand-to-mouth buying has not resulted in relief of credit burden and this is true particularly of makers of parts and accessories who appear to be the greatest sufferers in the industry from this practice. Retailers will no longer carry large stocks of parts, nor will wholesalers, but both are depending upon the manufacturer to keep them supplied. To do this under strong competitive conditions has resulted in the establishment of warehouses by some parts and accessory manufacturers from which quick shipments can be made to wholesalers. In some cases the manufacturer has charged for warehouse service by quoting higher prices for goods delivered from them than from the factory but, in general, it is probably true that this addition to the distribution system has been an added expense to part and accessory makers just at the time when other members of the industry are reducing these costs.

Lower Profit Margins

Another result which has not been strongly in evidence yet but which has been suggested as a future possibility is the lowering of profit margins for wholesalers and retailers. In the past a very definite part of the distributing organization's task was to relieve the manufacturer of part of the credit burden of carrying his finished goods inventory and profit margins have been set after consideration of the expense which this would entail. It has been suggested that inasmuch as under hand-to-mouth buying wholesalers and retailers have been relieved of a considerable share of this burden their profit margins might undergo a change to line them up with present conditions.

The final question which may arise in regard to hand-to-mouth buying is that of its permanency. Is it a business practice which may be expected to continue through

all future phases of economic movements or is it predicated entirely upon some factor like a declining price trend and so be only as permanent as its supporting medium?

A number of authorities have attempted to answer these questions definitely but none have succeeded in presenting a reply which has been generally acceptable and it is likely that they cannot be answered categorically, at least until considerably more is known about the whole subject than is now available.

Commodity Prices Control

In the first place it seems likely that hand-to-mouth buying will continue so long as the economic tendency of commodity prices is downward. Small lot purchases is the obvious reaction of a purchaser to such circumstances and, other conditions remaining the same, this is likely to hold true in the future as in the past. There is considerable difference of opinion as to how long the present downward movement will continue. Some see it as a simple cyclical movement which has just about reached its nadir and may be expected to halt or to turn upward shortly. Others believe that rather than a cyclical trend the present downward movement is the start of a secular movement which will last for years, similar to the condition which set in after the Civil War and lasted into the present century.

Which of these two opinions is nearer the facts is anyone's guess and the future holds the only definite answer.

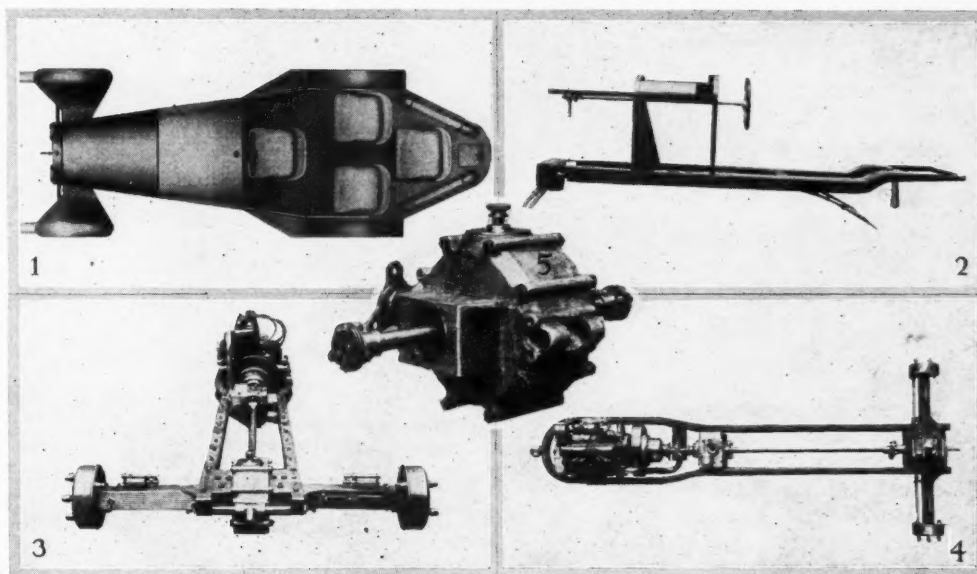
The other conditions which effect the permanency of hand-to-mouth buying are excess productive capacity and good transportation facilities.

Future Promising

Without another catastrophe such as the late war to disrupt manufacturing organizations, it appears likely that the natural optimism of individual manufacturers in the ability of the public to absorb more and more of their particular products will keep total capacity well above any normal consumptive requirements. It is not impossible, and is considered desirable by many, that the ratio of excess capacity to normal demand be lowered considerably from its present position but there is little likelihood that many manufacturers will ever knowingly place themselves in a position of not being able to supply as much of their product as their optimistic forecasts lead them to believe they can sell.

Transportation facilities should continue to improve in the future. Only during the last few years have railroad managements really set their minds to the task of bettering their operations and the results which have already been obtained suggest that the future may see even greater developments than any in the past, and in which the automotive industry and the aircraft industry will play no small part.

So, to sum up, hand-to-mouth buying has advantages and disadvantages for both buyers and sellers but the net result seems to be, on the whole, beneficial to all when carried out in an intelligent manner as controlled purchasing. Whether or not the practice is to be a fixture of our economic system appears to be dependent upon the unknown future although should it prove particularly advantageous after more experimental knowledge has been acquired concerning it would not be impossible, probably, to retain many of its advantages even should surrounding conditions alter considerably from their present state in which they are particularly favorable to this method of making purchases.



1. Bird's-eye view of Peretti light car, showing unusual seating arrangement. 2. Body frame with gasoline tank, steering column and springs. This frame attaches to the chassis frame at two points. 3. Chassis as seen from rear, showing differential housing in position. One of the cover plates has been removed from axle, showing a differential shaft. 4. The mechanical frame. 5. Differential housing which is bolted to combined frame and axle

Italian Light Car Has Separate Chassis and Body Frames

All mechanical units are built into chassis frame, to which body frame is connected at two points only. Steering column is horizontal. Seating is unusual.

By W. F. Bradley

THE use of two frames, one uniting the whole of the mechanical units and the other receiving the body, the two being connected at two points only, is the outstanding feature of a light car produced by the Peretti Co., of Milan.

The mechanical frame, which includes the rear axle housing, has two parallel side members set very close together, with the separate engine and transmission directly attached to them. There is a flexible coupling between clutch and transmission, and the open driveshaft between transmission and rear axle also has a couple of flexible joints.

While the frame and the axle housing form one unit, the cast aluminum differential housing is separate and is bolted to the plates uniting the two side rails. Each differential shaft has a couple of flexible couplings. Any one of the three units—engine, transmission and differential—can be taken out separately, but when united they form a rigid whole and are attached to the body chassis in front by a ball and socket and at the rear by an inverted T-piece, the horizontal arms of which oscillate in bushings in the differential housing and the vertical stem is guided in a cylindrical support projecting from a central

point on a cross member of the body chassis.

To give the required seating accommodation the body chassis is much broader than the mechanical chassis. The seating arrangement is unusual, the driver being placed centrally behind a steering wheel mounted on a horizontal column, two separate seats being placed side by side behind this and the fourth seat being in the rear center.

Rear suspension is by quarter-elliptic springs clipped to the body frame and shackled to the extremities of the axle constituting a part of the chassis frame. At the front two transverse springs in the same horizontal plane are used.

The engine is a normal four-cylinder L-head type of 2.71 by 3.93 in. bore and stroke, giving a piston displacement of 91 cu. in. With a wheelbase of 94 in., a track of 47 in. and a total length of 153 in., it is stated that the complete car weighs 1100 lb. With four passengers, gas, oil and water, the weight does not exceed 1720 lb. As the engine develops 21 hp., the total weight per horsepower is 81 lb. The weight of the body frame, which carries the springs, gasoline tank, steering column and steering wheel, is less than 100 lb.

"62" is New Chrysler Model—Six Body Types in Line



*Chrysler "62" rumble-seat coupe listing at \$1,245.
Note lower belt line molding*

Features include crankcase ventilating system, rubber-cushioned engine supports and heavier crankshaft.

By A. F. Denham

ANNOUNCEMENT is made by the Chrysler Corp. that a new model, designated as the "62" is now in production. A considerable number of improvements and refinements have been incorporated in the new car, including such features as a crankcase ventilating system, four-point rubber-cushioned engine supports, ball and trunnion type universal joints, heavier transmission, worm and sector steering gear, and form-fitting seats.

Six body models are included in the new line, the two-door and four-door sedans listing at \$1,145 and \$1,245 respectively, with a landau sedan priced at \$1,295 and a touring car at \$1,095. Rumble seats are standard equipment on the roadster and coupe models which list at \$1,175 and \$1,245 respectively.

Conforming to the Chrysler system of nomenclature, the new model is said to develop a top speed of 62 m.p.h. With a bore and stroke of 3 by 4¼ in., the six-cylinder engine has a piston displacement of 180 cu. in. and is of the L-head type, while such features as a seven-bearing crankshaft, chain front end drive and aluminum pistons are incorporated.

Of the new features, the crankcase ventilating system is interesting. The crankcase filler is located at the front on the left side of the engine. Air is taken in through this filler, which incorporates an air cleaner of the inertia type similar to that mounted on the carburetor, and is whirled about in the crankcase due to the rotation of the shaft. At the left rear of the crankcase casting is a cored hole to which a pipe is attached, leading downward and backward. Air pressure under the hood, caused by the fan and forward motion of the car creates

suction in this pipe and causes free circulation of filtered air in the crankcase.

Among other engine changes is the improved water circulation thermostat, while cellular type radiators are incorporated in the cooling system. In other respects, characteristics and dimensions of the engine are similar to those in the Model 60 engine.

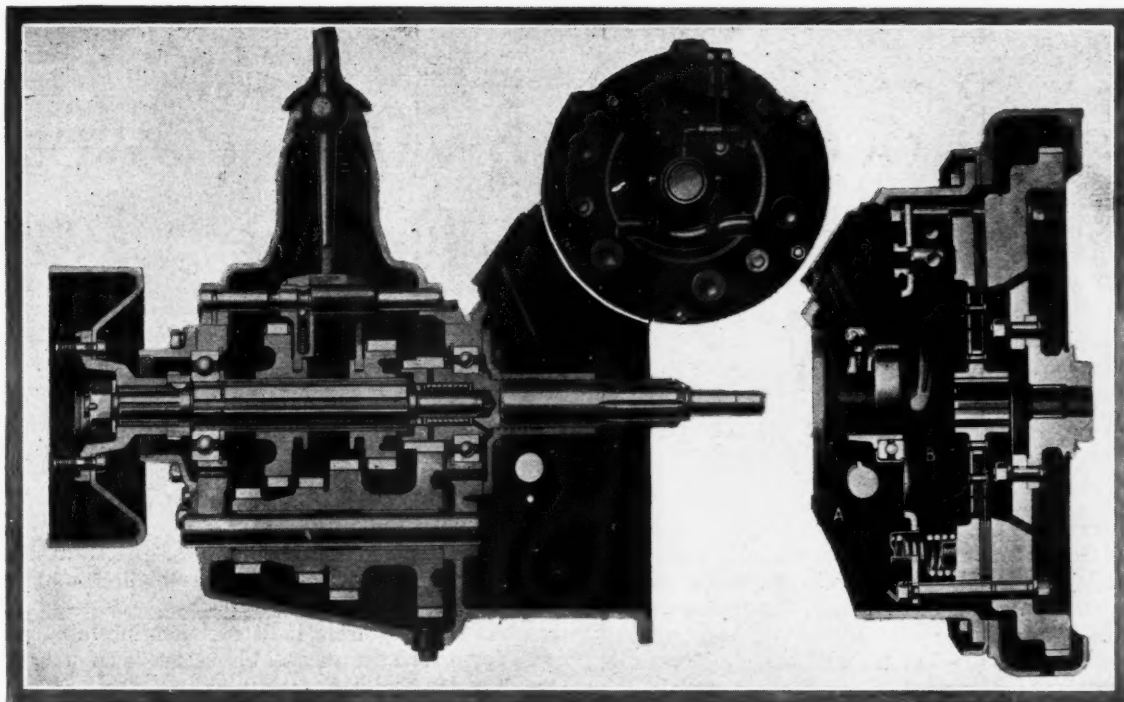
The transmission is of new design. Its housing is integral with the clutch housing and a roller bearing has been adopted for the mainshaft front bearing, the rear bearing being of the ball type. The rear bearing for the main drive pinion is likewise of the ball type, while the countershaft is mounted on bronze bushings.

Noise Reduced

In order to reduce driving mechanism noises a rubber insulated driving disk has been incorporated in the single plate clutch. This insulation of the driving mechanism from the power impulse also assists in absorbing sudden strains. A further step to reduce vibration noises is found in the rubber-insulated engine suspension used. The rear engine mountings, which are now also rubber-cushioned, consist of a bracket fitting into the frame channel and insulated from it by rubber. Another rubber insulator is mounted on the outside of the frame web, between it and a metal plate through which the engine-support bolts pass. With complete engine insulation, a short piece of cable is provided between one of the left rear support bolts on the engine and a steering gear bracket bolt to provide a ground connection for the electrical system between the engine and the frame.



Form-fitting seats have been incorporated in all body models of the "62" line. The instrument panel is of striking design and is in two-tone finish, with the Fedco identification plate in the center



Left—New Chrysler "62" transmission. The transmission and clutch housings are in one piece. Center—Clutch plate has scalloped hub and rim plates to provide better stress distribution on the fabric disk. Right—Section of flywheel and clutch

Incorporated in the lighting system are twin filament headlights. The lighting switch mounted on the dash has only two positions, one for driving lights, the other for parking, three cp. bulbs being provided in the headlamps for parking use. The twin filaments are, in turn, conveniently controlled by a lever on the steering wheel.

Instrument Panel

The instrument panel is one of the most interesting designs that has recently appeared. The board is lacquered in two-tone colors to correspond with external body color schemes, while the panel, indirectly lighted, is finished in cream and trimmed in nickel. Speedometer and lighting switch, including the locking ignition switch, are placed at the extreme left and right respectively, the center holding the electrically-operated dash gasoline gage, and ammeter and oil pressure gages, the dash gasoline gage being effective only with the ignition turned on. Mounted above the instrument panel, in plain view, is the Fedco serial number plate, and below the panel are three buttons controlling the choke, manifold heat control valve and automatic vacuum-operated windshield wiper.

Swinging type windshields are used on the open models and ventilating types, crank-operated, on the closed cars. Windshield stanchions on the open cars are provided with a double wing nut at the top to secure the tops in place. Adjustment of the front seat on the phaeton is obtainable by throwing over a lever in front and at the bottom of the seat, operating a pawl. It is adjustable to six positions.

Arm rests for the rear seats of the sedan and form-fitting seats provided by the use of saddle-spring cushions have been incorporated to increase driving comfort, mohair upholstery being used on the closed cars with leather on the open models.

Body lines have been improved through the use of lower stream-lining and a downward curve of the roof

at the rear of closed cars, the roof line being followed in the window design. Axles, frame springs, tires, etc., are substantially the same as on the model 60.

THE French Ministry of Agriculture (Central Committee on Power Farming) is organizing for the spring and fall of 1927 tests of suction gas tractors and stationary engines, including both bench tests and field tests. These tests will take place at the National Agricultural School at Grignon (Seine et Oise), under the direction of M. Coupan, professor of farm engineering at the school mentioned, and a member of the Central Committee on Farm Engineering. Important advantages are being held out to manufacturers who participate in the contest. Entries close July 1. Copies of the regulations can be obtained from the Minister of Agriculture, 78 rue de Varenne, Paris.

IT is reported from Berlin that an agreement has been reached between the Bayerisch Motoren Werke and the Daimler-Benz Company, according to which the experience of Daimler-Benz in airplane engines will be placed at the disposal of the B. M. W. and the Daimler firm will confine itself to the manufacture of light and small aircraft engines. On the other hand, the B. M. W. has agreed not to market the automobile which it had developed, so as not to come into competition with the new Daimler-Benz models. The Bayerische Motoren Werke are said to have had a prosperous year and declared a dividend of 12 per cent on the common stock, the same as last year. The capital stock of the firm has been increased from 5,000,000 to 10,000,000 marks. The agreement is probably largely due to the fact that both firms are backed by the same financial group.

New Locomobile 8-70 is Powered by L-Head Engine

Prices on latest series run from \$1,785 to \$1,995.
Single plate clutch of dry type is used.

A NUMBER of changes have been made in the Locomobile Junior Eight, which hereafter will be known as the 8-70. Prices on the new series are as follows.

Eight-70—124 in. wheelbase

Chassis	\$1,650
Touring car	1,785
Roadster	1,895
Sedan	1,895
Brougham	1,895
Collapsible coupe	1,995

The 8-70 has an L-head type of engine, while the engine of the former "Junior" also known as the 8-66, was of the valve-in-head type. The bore is $2\frac{7}{8}$ and the stroke $4\frac{3}{4}$ in., giving a piston displacement of 246.7 cu. in., and the engine is said to develop 70 hp. at 3000 r.p.m. The cylinder block is cast integral with the crankcase, the unit being heavily ribbed. The rigidity of the block is further added to by dividing the crankcase below the crankshaft axis.

Aluminum Pistons

Pistons are of the Nelson type of aluminum alloy with Invar struts. Connecting rods are made of drop forged steel, of I section and are heat-treated. The crankshaft is a drop-forging of medium carbon steel, heat-treated, and is supported in five main bearings. Owing to the large diameters of the main bearings and crankpins and the large-section crank arms it is extremely rigid. All bearings on the crankshaft are of the babbitt-lined type. At the forward end the crank is provided with a Lanchester torsional vibration damper.

The camshaft is forged with integral cams and is heat-treated and ground. It is supported in six bronze bearings and is driven from the crankshaft through a silent chain, with provisions for taking up slack due to wear. Valves are of Silchrome.

A Schebler carburetor is fitted, and in connection with a special type of manifold and a carefully worked out hot spot is said to assure a supply of properly proportioned combustible mixture to the engine under all working conditions. The whole of the electrical system—starting, lighting and ignition—is of Delco-Remy make, and a storage battery of 6 volts and 142 amp. hr. capacity is used in connection with it. The generator has third-brush control and is driven by the front-end silent chain. The starting motor is located at the rear and engages the flywheel through a Bendix drive. The distributor is of the semi-automatic type and is located above the generator.

The water circulation pump, of the conventional centrifugal type, and the 18 in. four-blade fan are combined and driven through a V-type belt. A cellular radiator of large frontal area is fitted. Engine lubrication is by the force feed system, oil being delivered under pressure to all main and connecting rod bearings.

Clutch is Dry Type

A single plate clutch is used, of the dry type, and combined with the engine, and provisions are made whereby it can be readily adjusted for wear. The transmission, which gives three forward speeds and reverse, is incorporated with the engine. A transmission lock is located at the base of the shift lever. The shift lever knob is very conveniently located at the right of the steering post.

A Ross cam and lever steering gear is fitted, with a specially large reduction ratio to give ease of steering with balloon tires. The drive is through a tubular propeller shaft of specially large cross section at the middle of its length, to obviate whirling at high speed. Two metallic type universal joints are incorporated in the drive. Torque and brake reaction are taken on the rear springs, which, like the front springs, are provided with rubber shock insulators.

The front axle has reverse Elliot steering heads and its knuckles are fitted with taper roller bearings. The rear axle is of semi-floating type, with ball and taper roller bearings throughout, the standard reduction ratio furnished being 4.77 to 1. Bendix internal three-shoe brakes are fitted to all four wheels. These act on drums of 12 in. diameter and have a width of friction lining of $1\frac{3}{4}$ in., making the effective braking surface per wheel equal to 68 sq. in. All four of the brakes are applied by the brake pedal, while the emergency brake lever applies only the rear brakes.

Spring Data

Front springs measure 37 $\frac{9}{16}$ by 2 and rear springs 58 by 2 in., and, as already pointed out, all are mounted in rubber shock insulators, which the Locomobile company has been using on passenger cars for several years. Artillery wheels are standard and are equipped with 31 by 6 in. six-ply balloon tires.

Owing to the extensive use of oil-less bushings and of rubber shock insulators on the springs, the number of chassis points calling for lubrication is far less than normally, but what points there are that need to be lubricated are provided with Zerk fittings.

The frame, which is made of 5/32 in. stock, has channels 7 in. deep and with 2-in. flanges. It has six cross members and is therefore quite rigid. The fuel tank is mounted at the rear of the frame and fuel is fed to the

carburetor by the Stewart vacuum system. The tank has a three-point support on the frame and is protected by a steel cover and frame cross member. An electric gas tank gage is mounted on the instrument board.

New Rockford Borer Makes Nine Holes at Once

A COMBINATION vertical and horizontal three-way boring machine, with two opposed horizontal heads and one head in a vertical plane, has been developed by the Rockford Drilling Machine Co., Rockford, Ill., and is illustrated herewith. With the particular machine shown, nine holes are drilled simultaneously in massive transmission cases, each head containing three spindles.

As may be seen from the illustration, motors are built directly into the heads, and they drive through worms and worm wheels. Variations in speed are obtained by means of pick-off gears, which latter can be conveniently changed from the sides of the heads. The motors are of 7½ and 10 hp. rating respectively.

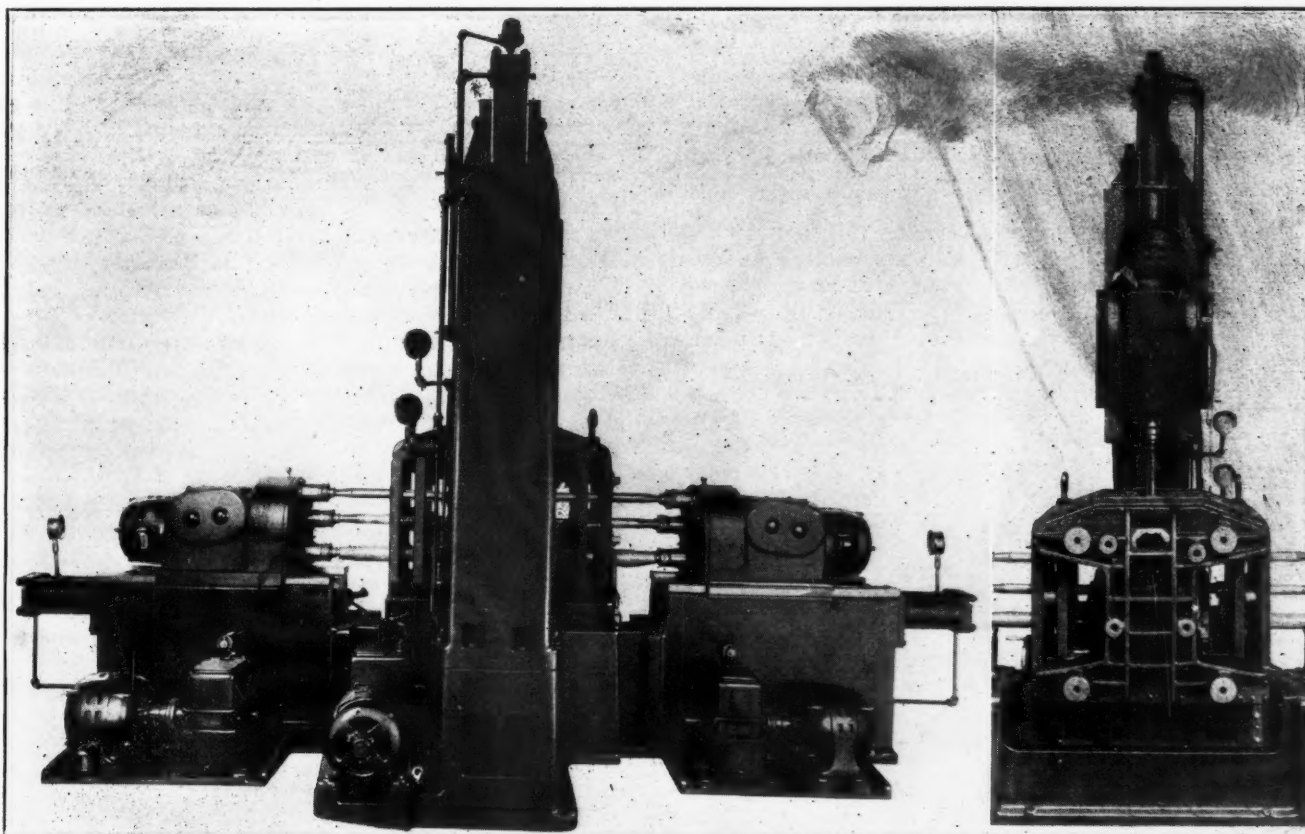
Although a wide range of spindle speeds is obtainable by means of the pick-off gears, the head is furnished with two separate speeds, which are obtainable by means of the same lever which starts and stops the spindles independent of motor control. There are only eight gears in the drive proper.

All rotating parts in the drive proper are mounted on taper roller bearings and run in an oil bath. The spindles with their ball thrust bearings form a complete unit which fits into the front of the head proper, becoming an integral part of it. Each spindle is supported on two bearings, one on each side of the spindle drive gear or idler, as the case may be, the complete unit running in a bath of oil.

The spindle units being interchangeable in the head proper, the machine does not come within the single purpose class. Work can be done on a variety of parts by using auxiliary spindle units having a smaller or greater number of spindles on centers to suit requirements. In each case the entire head, comprising the motor, drive proper and spindle unit, is traversed back and forth on scraped ways by means of an Oilgear pump and cylinder. Both hand and automatic control are available, and the class of work to be done determines whether each head is operated by an individual pump or whether two or more heads can be operated from one pump. The particular machine illustrated required three pumps and controls, each operated by a 3 hp., 900 r.p.m. motor.

With the hand-controlled type of pump the operator must engage each function desired, while with the automatically controlled pump the operator ~~engages only~~ the rapid approach and the automatic feature ~~then engages~~ all of the functions through a ~~complete~~ cycle. Automatic stops are provided on both types of machine for forward and reverse traverse.

The fixture shown on the machine illustrated is also of Rockford Drilling Machine manufacture, and its heavy construction gives an idea of the nature of the work required. Arrangements are made for swinging the entire fixture forward on a pivot.



Full view of new Rockford boring machine

Close-up of fixture

European Manufacturers Adopting Generator-Starters

Type generally used is mounted on front end of crankshaft and runs at engine speed when operated as generator but is geared up when functioning as starting motor.

By W. F. Bradley

SINGLE unit electric generators and starting motors are being more extensively adopted by European automobile manufacturers. In the past the general tendency has been to employ a direct coupled single unit on small motors and to make use of two separate units for medium and big-sized engines.

Recent developments point to a more extended use of the single unit, for Renault has decided to apply this system to the whole of his cars, from the smallest to the largest; it is being used by Panhard & Levassor and Voisin, and several new models in preparation for the fall show will be presented with a single unit generator and starter.

Results have been altogether satisfactory when the single unit was applied to small engines of 60 to 90 cu. in. piston displacement. Above this size difficulties have been met, important among them being the great size and weight of the electrical apparatus. Running at engine speed, results were satisfactory when operating as a generator, but left much to be desired when functioning as a starting motor. To overcome this, use was made of generators geared up in relation to the engine by means of a chain, the ratios generally adopted being 1 to 2 or 1 to 3. Experience has been that chains would not stand up to this work.

Adoption Growing

The type now being adopted in increasing numbers is a combined generator and starter mounted on the front end of the crankshaft, running at engine speed when operating as a generator and being geared up by a planetary set in the ratio of 7 or 8 to 1, when operating as a starting motor.

The S.E.V. Co., of Paris, has put two such models on the market, for use respectively on 20 and 40 hp.

engines. As these ratings are conservative the generators and starters are capable of meeting the requirements of the biggest engines produced in Europe. The chief data of these two models are as follows:

Type S-D 41: 12 volts; 180 watts; external diameter 5.5 in.; overall length 15 in.; weight 46 lb.; reduction 1 to 7.3. Type S-D 81: 12 volts; 200 watts; external diameter 7.08 in.; overall length 15 in.; weight 75 lb.; reduction 1 to 8.1.

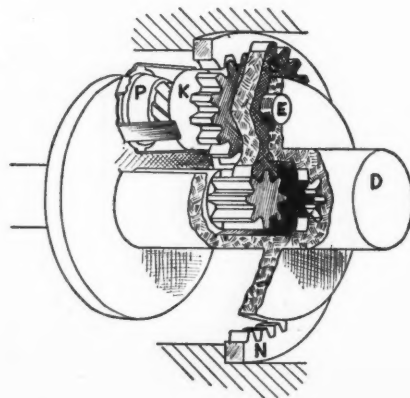
Production Costs

While it is admitted that the single unit is more costly to produce than two separate ones, it is claimed that the total cost, as fitted to the automobile, is no higher, for economies result from the absence of a ring gear and the elimination of starter assembly operations. Other advantages are absolutely silent operation when running as a starting motor, complete accessibility, and much "cleaner" engine lines.

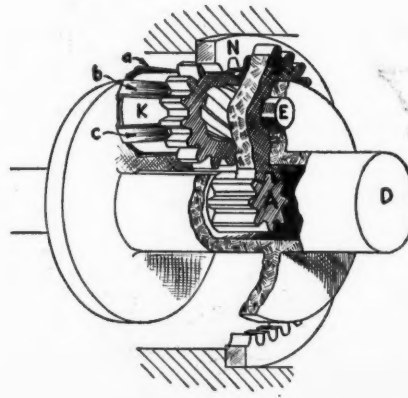
Apart from the addition of mechanical parts, the geared-down type of machine is electrically more complicated than the direct-coupled starter. There are four field poles, of which two carry a shunt winding for use when the machine serves as generator, and the other two a series winding, for use when the machine acts as starter. The armature carries two distinct windings and two commutators, one commutator with its associated pair of carbon brushes at each end.

Among the distinctive and patented features of the S.E.V. is the interposition of a planetary reducing gear between the engine crankshaft and the armature. The housing carrying this mechanism contains two disks, one of which is connected to the crankshaft and the other to the armature shaft. When operating as a starting motor, the armature shaft A drives pinions

Sliding gear
in position
for starting



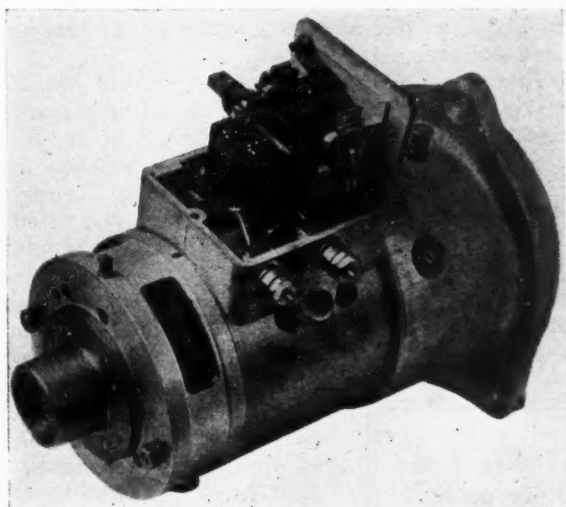
Sliding gear
in position
for generating



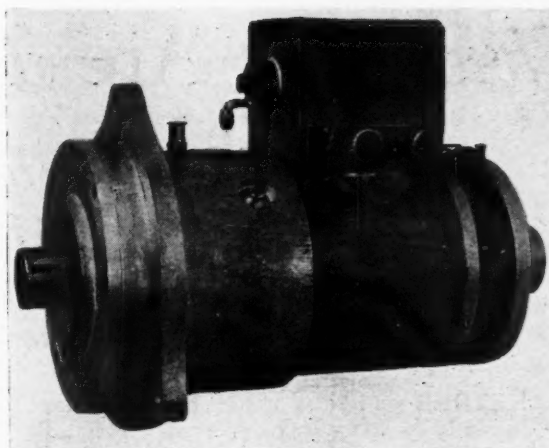
S and *K*, which revolve within the fixed internal ring gear *N*, and consequently drive the entire planetary cage and the shaft coupled to the engine at a speed reduced in the ratio of 7.3 to 1 for the medium model and 8.1 to 1 for the big model.

Action Explained

When operating as a generator the sliding pinion *K* is locked to the cone *P*, fixed to the planetary plate. The pinion is fixed to the cone by means of the laminated tulip-shaped springs *a*, *b* and *c*. Pinion *S* is in engagement with the armature shaft *A*, and as a consequence the entire reducing gear is locked and the two shafts *A* and *D* turn at the same speed. American



S.E.V. electric unit with commutator band and cover over battery cut-out removed



S.E.V. combined electric starter and generator with planetary reduction gear

patents on this apparatus cover the fixed ring gear, the double planetary pinion, and also the use of an overrunning sliding pinion with locking mechanism by means of ratchet teeth.

Another patented feature of the S.E.V. starter-generator is the means provided for cranking by hand in case of break-down of the starter or an accident causing the planetary pinions to be locked. The shaft carrying the two disks is tubular, and within it is a second shaft *A* sliding on a keyway, having ratchet teeth for the starting crank at one end and external teeth on the other end capable of being brought into engagement with the internal teeth on the crankshaft coupling. Normally kept out of engagement by means of a spring, the teeth are engaged by pushing in on the starting crank.

German Dealers Express Views on Motor Laws

AT its annual meeting, recently held in Cologne, the German Automobile Dealers' Association passed certain resolutions expressing its views with regard to the contemplated revision of the German motor vehicle tax law. German motorists have shown a strong preference for cars that are liberally powered, like most American makes, and German makers feel that in bringing out new designs they should materially increase the piston displacement, but they are handicapped in this respect by the high horse power tax, which is directly proportional to the piston displacement. This has led to a definite movement looking to a revision of the present method of taxation, but there has been considerable difference of opinion as to the best basis for the new tax. The Dealers' meeting expressed its position on the subject as follows:

The annual automobile tax, the way it has been applied so far and as it has been recommended anew with slight modifications by the automobile industry, is a purely personal (ownership) tax. Aside from its influence on automobile design, which results from the method of calculating the tax, its chief disadvantage reside in the magnitude of the amounts which must be paid at one time, constituting a rather heavy burden on the owner, and in the fact that the relative use of the vehicle, and therefore, the wear and tear on roads caused by it, are not taken into account.

Any new formulation of the tax should by all means take account of the degree of road use. A

suitable criterion would be the fuel consumption, which in all cases is closely proportional to road use.

Calculated on the basis of the number of vehicles in the country on July 1, 1926, the total revenue from automobile taxation cannot be more than 100,000,000 marks per year, if German owners are not to be abnormally burdened, as compared with owners in other countries.

Of the total revenue, one-half should be raised by an annual tax calculated on the following basis:

For passenger cars, \$1.30 per 100 cu. in. displacement.

For motorcycles, \$5.85 per 100 cu. in. displacement.

For motor trucks, \$6.50 per 1000 lb. vehicle weight.

It is desirable that this annual tax be made payable in quarterly instalments without majoration.

The other half of the revenue from motor vehicles should be raised by a tax on all liquid fuels principally used in motor vehicles at the rate of 2.7 cents per gallon. In order to facilitate the collection of this consumption tax, no attempt should be made to levy it only on liquid fuels actually used in motor vehicles. This very low tax, which does not exceed price fluctuations within short periods, could undoubtedly be carried without detriment by the other industries using such liquid fuels (agriculture, chemical industry, dye industry), especially in view of the fact that all of these industrial groups are interested in an alleviation of the tax burdens more imposed on motor transport.

Time Sales Are Thoroughly in Accord With Sound Economics

Chicago banker says united action on part of banks to control credits to finance companies is not desirable even if possible. Instalment buying fears unfounded.

WHETHER we like it or not, the instalment business is here to stay—if properly handled, it is, like many other forms of credit, not uneconomic. There are millions of people owning cars and other merchandise articles today who would never have saved the money in advance to buy them, but having run into debt for the particular object, have saved to pay the debt, and are now owners of an automobile or other desirable articles of use or pleasure."

Thus Arthur W. Newton, vice-president, First National Bank of Chicago, summed up his views on instalment selling as given in an address delivered at the recent Illinois State Conference of Credit Men.

Mr. Newton said that while the principles of instalment selling had been known for years and had been put into practice many years ago by makers of books, sewing machines, and other objects, it remained for the popularization of the automobile to bring it to full growth. The rapid expansion of instalment selling made it impossible for dealers to longer finance the extensive sales and finance companies, especially organized for this purpose, came into being. The method by which these companies proposed to finance instalment sales was rather ingenious.

Of course, said Mr. Newton, the companies could not lend more than their capital without recourse to borrowing from the banks and to accomplish this, security for the loans must be given. To put up as security the great mass of notes which a finance company receives would entail a great deal of clerical effort on the part of the bank which would not likely be equipped to handle it. As a result it was found expedient to deposit the finance company's collateral with a trust company under certain conditions which are outlined in a trust indenture and against which loans could be obtained from the bank.

Although many banks have looked upon finance companies with a skeptical eye, Mr. Newton believes that such companies are really a highly specialized commercial bank which do not interfere in any way with the business of the regular banking house. Experience has shown, he continued, that the note of a well conducted finance company makes a most desirable risk. Like a bank, it has only liquid assets, but

unlike a bank its risks are scattered over a great number of loans, no one of which is for more than a few hundred dollars.

Finance companies do fail of course, but Mr. Newton's experience has been that such failures result in remarkably small losses for creditors. One of the main weaknesses in the situation he believes to be the rapid growth of the business with big profits which has attracted men to it who are not fitted by ability, experience or integrity to manage a finance company.

Most of the fears which have been expressed as to results of instalment selling, Mr. Newton believes to be ill-founded. Panics and depressions may come as they have in the past but he believes that such a volume of instalment selling as we now have will not be their cause.

Instalment selling is not increasing, he believes, at least to any dangerous degree and he pointed to the fact that during the last two year period while savings deposits increased 17 per cent, the total instalment debt increased but 8 per cent. Automobiles have been the preponderating factor in past increases and indications are that this particular factor is not increasing to any extent at present. Leaving automobile financing from the picture instalment debts of

all other lines decreased 19 per cent during the two year period.

Mr. Newton did not deny that instalment selling has had its abuses, as have all other forms of credit, but he believes that this will take care of itself as the inexperienced and incapable men are gradually forced out of the business. With proper organization, he believes that finance companies can keep as strong control over their members as do banking clearing houses. Also individual banks will exercise supervision over individual finance companies just as they do over their clients in any other line of business and between these two there appears to be no reason why the financing business should not be conducted as well as any.

As to the safest kind of instalment risk Mr. Newton believes it to be that article which the owner is least willing to part with and which, if repossessed, has the

IT has been suggested that it is the duty of the banks of the country to keep in check the supposed growth of instalment sales, and that this could be done by their united action in curtailing credits extended to finance companies.

"I can only say that it is no part of the business of the banks to unite for such a purpose, even if it were feasible or legal for them to do so."

—ARTHUR W. NEWTON,

First National Bank of Chicago.

greatest resale value. Automobiles, he places high in the scale, since few persons give up a car after once having it, thus tacitly admitting their inability to continue payments on it. Many of them prefer to defer payments to the grocer, the landlord and other creditors in order to keep up payments on their car whose possession is a matter of personal pride.

Continuing, Mr. Newton said in part:

"It has been suggested that it is the duty of the banks of the country to keep in check the supposed growth of instalment sales, and that this could be done by their united action in curtailing credits extended to finance companies. I can only say that it is no part of the business of the banks to unite for such a purpose, even if it were feasible or legal for them to do so. But, in fact, such united action on the part of banks is impossible.

"The banks have troubles enough in keeping their own house in order, which as a rule they do very well, without attempting to dictate to other lines of business what they should do. The banks have their Clearing House, their Clearing House Committees, and their bank examinations, which in Chicago, for example, have succeeded so well in keeping their members in line, that since 1906, when clearing house examination was first established in this city, no depositor in

any Chicago Clearing House bank has ever lost a dollar or had to wait a day beyond the time agreed upon to collect his deposit or any part of it. In many cities, Chicago among them, the banks have a regular exchange tariff governing the charges on out-of-town checks, which, so far as I know, has been rigidly adhered to.

"With proper organization the finance companies should be able to keep as strong control over their members as do the banks. What the banks can and undoubtedly will do, is to exercise the same supervision over the individual finance company as they do over the firm or company in any other line of business. In other words, if a bank does not like a finance company's statement, its management, or its methods of doing business, to the extent that it feels that its loans are in jeopardy, the bank will very properly either curtail the finance company's line of credit or withdraw it entirely, just as it would do with any other kind of borrower.

"Naturally, banks inquire of one another as to their experience with this or that finance company, but I have never yet had any bank suggest to me that it and we should agree to try to compel any finance company to do its business in any particular way, nor should I care to enter into any such agreement."

Reo 1½-Ton Speed Wagon Has Four-Wheel Brakes

A NEW edition of the Reo Speed Wagon has been issued. It is powered with a six-cylinder engine, has four-wheel brakes, automatic chassis oiling system and a comfortably upholstered, fully enclosed driver's cab. Load capacity is 1½ tons.

The six-cylinder engine 3 3/16 by 5 in., developing 60 hp. at 2000 r.p.m. The upper crankcase is integral with the cylinder block while the lower case is of corrugated aluminum. Intake valves are chrome nickel steel; exhaust valves are silchrome steel and are offset from the cylinders. Timing gears are helical with the main drive and idler gears of fabric. Pistons are of Lynite and weigh 1.4 lb. complete with rings.

Carbon steel connecting rods and a drop-forged manganese steel crankshaft are employed, the latter being balanced statically and dynamically. Four main bearings are used. Camshafts are drop-forged steel with integral cams. Engine lubrication is force-feed to main bearings timing gears and rocker arms, and splash to cylinder walls, camshaft and connecting rod bearings. Water circulation is insured by a centrifugal pump.

Ignition is of the jump spark type with current being supplied from generator which also supplies current to storage battery for operating lights and starter. The latter systems are of the two-unit, six-volt type. Willard battery is standard. Headlamps are TiltRay with non-glare lenses. An electric tail lamp is also provided.

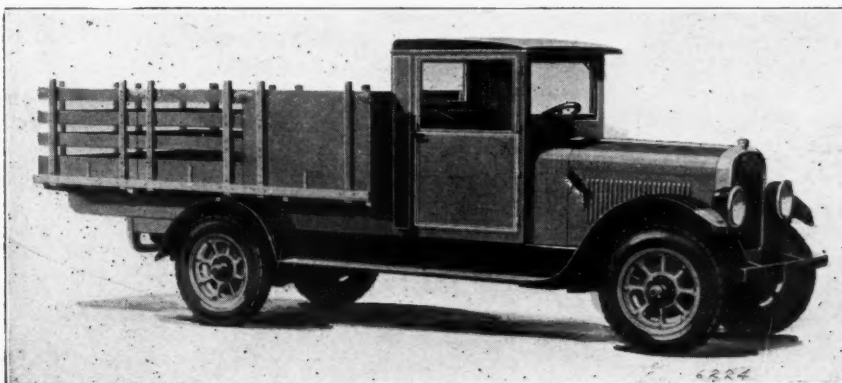
The clutch is a 12-in., single dry-plate unit. Sliding selective transmission with three forward speeds and reverse is employed. The propeller shaft is of cold drawn tubular steel shafting with two enclosed universal

joints between transmission and spiral bevel gears in rear axle. Standard gear reduction from engine to rear wheels ranges from 5.2 to 1 on high to 22.98 to 1 on low and 31.8 to 1 on reverse.

Mechanically operated, internal brakes are fitted to all four wheels. Rear brakes are 3 by 14½ in. while front are 2 by 14½ in. The I-beam front axle has drop-forged steering spindles with thrust bearings fitted for ease in steering. Taper roller bearings are used in the wheels.

The rear axle is of the semi-floating type with live shafts of forged and heat-treated chrome-nickel steel. Taper bearings are employed in the differential and wheels. Steering gear is of the adjustable bevel pinion and sector type with intermediate gear controlling front wheels by forged levers.

Wheelbase is 133 in. Tires are 32 by 6 pneumatic. Overall chassis length is 196 5/16 in.

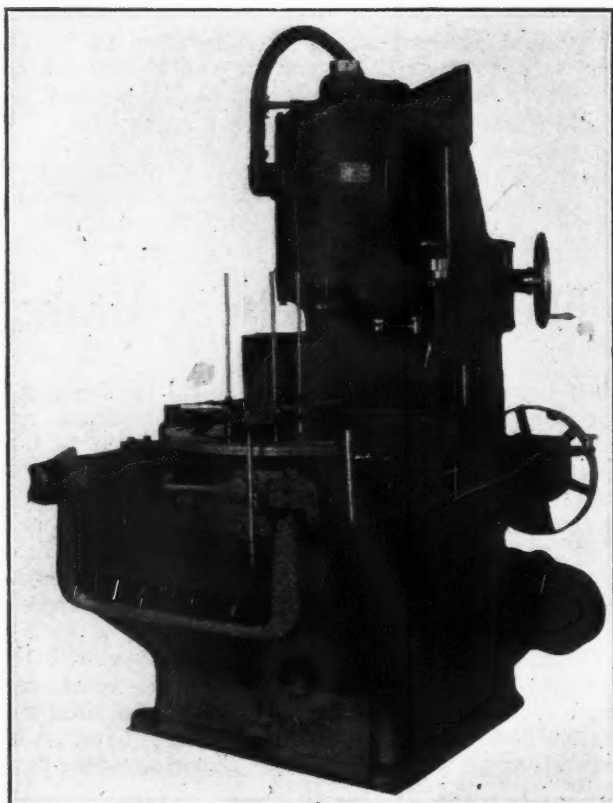


In the June 11 issue of *Automotive Industries* the illustration accompanying the description of the new Reo 1½-ton Speed Wagon was incorrectly captioned, it being the new Reo Junior Speed Wagon. The 1½-ton Speed Wagon is illustrated above

New Developments of Interest

A SPECIAL surface grinder for asbestos clutch facings of either the molded or woven type is being made by the Blanchard Machine Co., Cambridge, Mass., being the modification of this company's No. 16 high-power surface grinder.

The work table is of cast iron, fitted with steel cleats so arranged as to leave pockets to receive the work. A stack of the clutch facings is placed in the vertical magazine and as the table with its cleats passes under the pile each set of cleats receives one piece of the work from the bottom of the pile. The work is held



Blanchard Surface Grinder

down in contact with the table by presser feet which are stationary but adjustable for different thicknesses of work. These are the curved bars seen to the right and in back of the pile of work. They extend from the magazine around to the grinding wheel and also cover the space inside the grinding wheel so that the work is held down against the table either by the presser feet or the grinding wheel throughout its travel. After coming out from under the wheel the work is lifted and discharged from the table by an inclined shoe and guide seen at the left of the magazine.

The grinding is done in one pass under the wheel, usually removing about 1/64-in. material, and as the grinding is done dry the waste material is removed by connection to the exhaust system. The wheel and

Machine Tools and

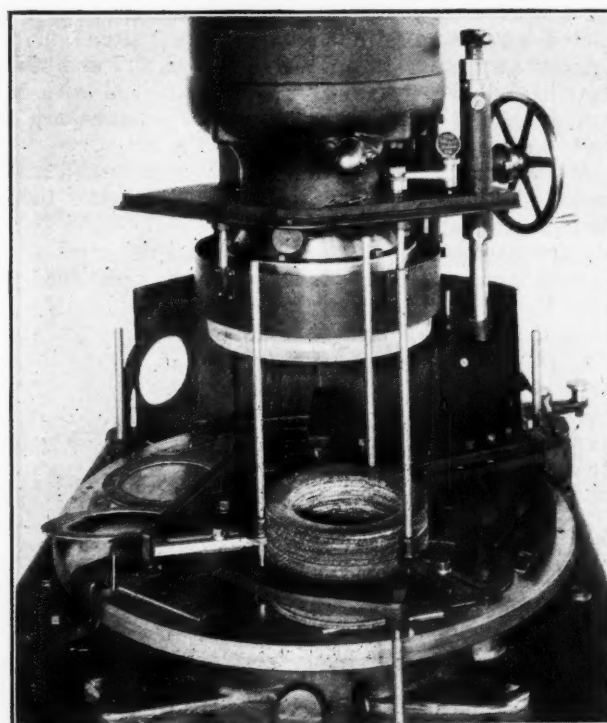


the portion of the table where the grinding is done are inclosed by guards and no dust can escape into the room. The loading and unloading positions are entirely outside of the guards, in full view of the operator.

As the wear of the wheel is slight, it is possible to use a simple hand feed, which the operator uses as needed, to compensate for wheel wear.

The magazine is adjustable for facings from 6 in. up to 12 in. diameter, and a second magazine can be furnished for handling facings from 3 in. up to 6 in. diameter. The presser feet take care of all sizes up to 12 in. diameter and thicknesses up to 5/16 in. The cleats on the table have to be changed for any considerable change in diameter of facing.

Production varies, according to the size of the facings; we are informed that on facings 10 in. in diameter removing 0.015 in. stock on each side, the production is over 1200 facings (2400 surfaces) per hour. the facings are parallel within 0.002 in. and are held to size within ± 0.002 in.



Close-up of new Blanchard Grinder

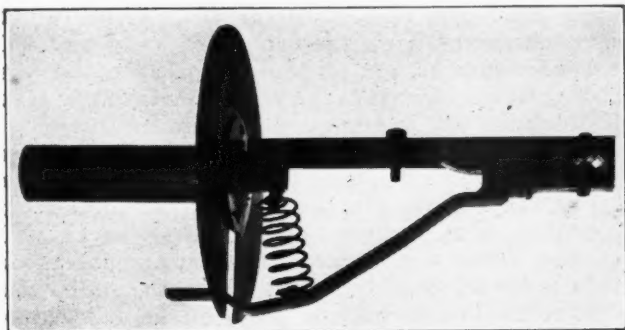
to Automotive Production Men

Other Shop Equipment



Lincoln Electrode Holder

THE Lincoln Electric Co., Cleveland, has recently brought out a new 600-amp. electrode holder designed to hold metal electrodes in sizes up to $\frac{1}{2}$ in. diameter. Among the features of this new holder are replaceable copper jaws, four-line contact for the electrode, all copper path for the welding current,



Electrode holder with replaceable copper jaws

structural steel construction, light weight with good balance, and cool insulated and ventilated handle and shield for protection of the operator's hand.

Portable Hand-Saw

A NEW portable hand-saw has recently been developed by J. D. Wallace & Co., Chicago, which is designed to take the place of the hand-saw in the tool kits of wood workers. It is powered with a universal motor to operate on either a-c. or d-c. current. A guard which covers the blade at all points is locked into position and is released by means of a trigger when the operator wishes to cut.

After finishing the cut and withdrawing the saw the guard automatically falls back into the locked position. A splitter follows the saw blade, drops into the cut and helps guide the machine. An indicator in front makes it possible to follow a line and the shoe is machined on one side to follow a guide rail. The saw can be set for use as a depth gage. It is fitted with a standard 8 in. round hole blade.

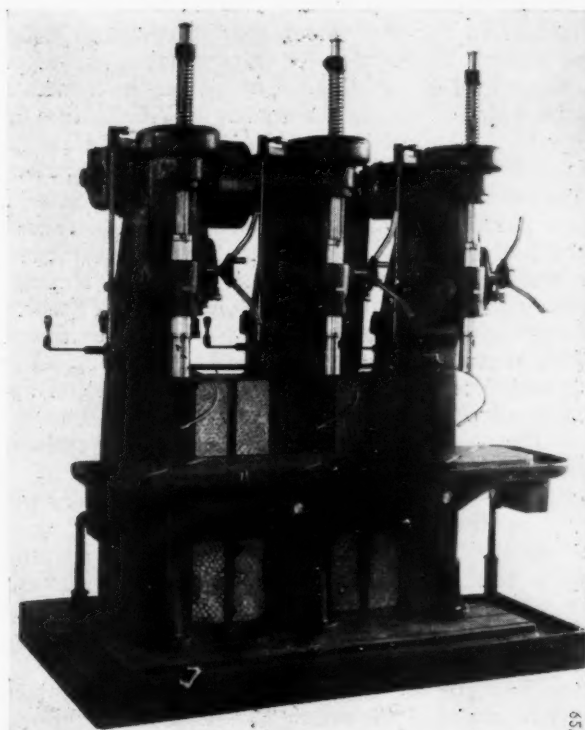
Barnes Gang Drill

THE accompanying photograph shows a new three-spindle all-g geared, ball-bearing, single-purpose, self-oiling gang drill manufactured by the Barnes

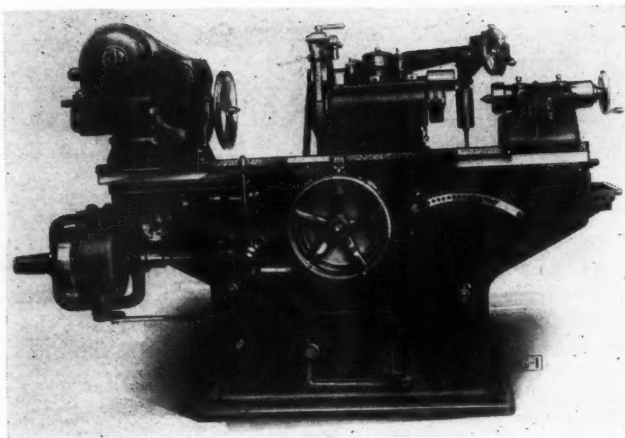
Drill Co., Rockford, Ill. This machine is said to be specially suited for single-purpose work where frequent changes of speeds and feeds are not necessary. The machine can be arranged for any pre-determined speed and for either one or two quick changes of feed. When it is necessary to change the speeds, the crown gears have to be exchanged, but this can be done quickly.

Among the distinguishing features of this drill are the six-splined spindle construction, the exclusive use of ball bearings, an automatic oiling system, the use of steel gears exclusively, and the star-wheel handle which has proven popular on other models, being conveniently located low down on the right hand side. This handle operates through an internal gear mechanism giving a leverage of 35 to 1. Each spindle has independent clutch control, the Barnes company using its own multiple disk clutches. The spindles are self-oiling. An automatic reverse for tapping is put on if desired.

Instead of using a single long driveshaft for all three spindles, a coupling is used between each pair of adjacent gang heads, thus making it possible to better align the radial ball bearings on the drive-shafts. Another feature to which attention is called by the maker is the very rigid column with double column ways, on which the table is gibbed and supported by three raising screws. The spindle sleeves and racks are of dovetail construction, eliminating all screws, the thrust being taken by a key.



Three-spindle Barnes gang drill



Landis self-contained universal grinder

Motorized Universal Grinders

A LINE of self-contained universal grinders has been developed by the Landis Tool Co., of Waynesboro, Pa., ranging in size from 12 by 30 in. to 16 by 60 in. They have practically the same range and all of the features of the Landis overhead machines.

Three motors are used for the new grinders—one for the work head, one for the wheel head and one for the carriage power traverse and the water pump.

The headstock is driven by a $\frac{1}{2}$ -hp. 500 to 2000 r.p.m., adjustable-speed motor with field rheostat control. This motor may be either 115 or 230 volts but it must be of the D.C. adjustable-speed type. It is mounted directly on the headstock, the drive being through sprockets and silent chain to a worm shaft. The power is transmitted by the worm shaft to a worm gear mounted on the spindle. The worm is hardened and ground and the worm wheel of bronze alloy. The worm wheel is partly submerged in oil providing lubrication to the driving worm.

The drive for the wheel head is through a 3-hp., 1750 r.p.m., constant-speed motor mounted directly on the wheel head slide. The power is transmitted to the spindle through a multiple V-belt, the drive being to the end of the spindle. A spring idler gives the necessary tension and compensates for stretch.

The drive for the carriage power traverse and water pump is through a 2-hp., 1750 r.p.m. constant-speed motor. This motor is mounted on the rear of the water tank, power being transmitted through a chain and sprockets to a shaft, on one end of which is the impeller of the water pump. From the other end of this shaft power is transmitted to a two-speed gear box, which in addition to the regular friction speed change gives the traverse speed range. The drive from the gear box to the friction speed change is through a belt with gravity idler.

If direct current is not available in the users plant, facilities are provided for mounting a D.C. generator on the rear of the machine. This generator is driven from the end of the traverse drive motor through a flexible coupling on the end of the shaft. When this is done a larger traverse drive motor is required than regularly specified.

The headstock, which is movable along the swivel table, is arranged for either live or dead spindle operation and can be changed quickly from one type to the other. It is of the universal type and can be swiv-

eled to grind short tapers from zero to 90 deg., and can also be swiveled for face grinding.

A single lever controls the starting and stopping of both the work and power traverse. It is also possible to use the power traverse without rotating the work if desired. The regular reversing mechanism used on the previous overhead driven machines is retained on the self-contained types. The regular standard equipment for complete universal grinding work is also retained. This equipment includes one 14 in. and one 12 in. grinding wheel with centers and fenders, wheel-truing fixture with mounted diamond, internal grinding fixture with driving pulley and belt, independent chuck, face plate, cutter chuck, stationary and traveling cutter tooth rests, set of work drive dogs, complete set of wrenches, necessary work rests, and complete water service and piping.

Radial Arm for Portable Tools

BLACK & DECKER has recently brought out a radial arm designed for use with portable tools, particularly large size stud setters and nut drivers. The radial arm consists of heavy brackets which may be bolted or clamped to a wall or post; a large steel column supported in these brackets and which in turn supports the arm itself. The arm has a vertical adjustment up and down the column of 24 in. and will swing through an arc of 180 deg. The center distance from the column to the bearing carrying bracket on which the tool is supported is 22 in.

The tool bracket has a vertical movement of $3\frac{3}{4}$ in. and is operated by a hand lever with a 5 to 1 ratio. The distance from the bearing bracket to the tool spindle is 14 in. and the bracket has an angular adjustment of 245 deg. This means that any point from 19 in to 36 in. from the point where the radial arm is attached to the wall or post can be reached by the tool.

The bearing bracket takes adapter blocks for any Black & Decker electric drill ranging in size from $\frac{3}{8}$ in. to $\frac{7}{8}$ in., and Nos. 3, 4 and 41 electric screwdrivers or socket wrenches. The weight of the radial arm is carried by ball thrust bearings on the column.

Parallel Rule Attachment

A NEW parallel rule attachment for drawing boards has recently been developed by the C. F. Pease Co., Chicago. Four sprocket wheels placed under the board connect the double chain drive while a shaft connecting two of the wheels assures uniform motion of the rule up and down the board. Sliding along the face of the board, one at each side, are two clamps designed to hold any standard straight edge. The entire mechanism is beneath the table and it can be installed quickly on any drawing board. Each sprocket chain is fitted with a screw tension regulator for taking up slack in the chain.

BULLETIN of the United States Bureau of Labor Statistics No. 430 is entitled Safety Code for Power Presses and Foot and Hand Presses, and contains the new American Standards for press operation and design which were sponsored by the National Safety Council and approved by the American Engineering Standards Committee.

Just Among Ourselves

Hand-to-Mouth Buying Effects Depend on Conditions

THE effects of hand-to-mouth buying vary quite strongly with the individual situation of the industry in which it is practiced. In the automotive field, for example, the condition of overcapacity which exists, generally speaking, makes practically all of the unfavorable aspects of the practice fall on the seller, except in the case of the car manufacturer selling the dealer. In this latter case the manufacturer holds a certain power over the dealer by virtue of the franchise arrangement which makes it possible for him to urge, usually with some success, that the buyer—the dealer—refrain from carrying the practice of hand-to-mouth buying to such extremes as might place too serious burdens on the seller—the manufacturer.

* * *

Sellers Get Worst of Hand-to-Mouth Automotive Buying

THE parts makers selling to the car builder, however, as well as the supply and factory equipment companies, have frequently been under pretty heavy stress through the tendency in recent years of vehicle builders to carry hand-to-mouth buying to greater and greater lengths. The car builders have rather thoroughly learned the fallacy of top-heavy inventories and the economies of small inventories with rapid turnover. In many respects the achievement of this latter aim may help rather than hurt the supplier, but carried too far it has a detrimental effect all around. The jumpiness of order releases, the consistent demand for lower prices in the face of the heavier distribution costs

brought about by the demand for quick, small-lot service in some instances has created situations among parts makers which, in the long run, may react unfavorably even on the buyers who temporarily gain a profit from the practice.

* * *

Value of Books Differs With Ideas of Readers

FOR the average automotive man, books probably can be divided arbitrarily into three general groups: those which inform, those which entertain and those which are thought-provoking. Plenty of books are a mixture of all three classes, of course, but one or the other quality usually predominates. The last group has always seemed to us the most worth spending time on, especially after one has mastered the fundamentals of his craft or position. Most of us are more in danger of thinking and acting in grooves than of having too many imaginative ideas. Keeping the old mind constantly stirred up and flexible is no mean task, but, it seems to us, a task which must be performed if automotive progress, in the engineering, managerial and distribution phases is to continue apace. Books which are thought-provoking for one man often leave the man beside him cold. There doesn't seem to be any general rule. Some of the relatively recent volumes which have rated high with us in the thought-provoking class are Well's "The World of William Clissold"; Sullivan's "Aspects of Science," both the first and second series; Cabell's "The High Place"; Durant's "Story of Philosophy"; De Kreuf's "Microbe Hunters," and Keyserling's "Book of Marriage."

Selling of Service Means Changed View

THE most encouraging sign about present factory attitude toward service problems is the way a number of the manufacturers are getting their dealers organized to go out and get service work to do. The idea isn't new, of course, but the task of merchandising service is being put under way in a better organized and more forceful way than ever before. Not only do direct benefits in the way of shop profits derive from the selling of service, but more basic advantages accrue as time goes on. As dealers get in the habit of actively trying to get service work into their shops, they gradually will get a changed attitude toward the whole maintenance situation. Service instead of being viewed as a necessary evil will be looked upon for what it really is—an added opportunity for fair profits. The factories have a constructive task ahead in the promotion of the idea of selling service as well as of performing the mechanical maintenance operations efficiently.

* * *

Appraisals Outnumber Sales by Wide Margin

A PROPOS of the figures compiled by Baltimore dealers—quoted last week—which indicated that shopping for bids on used cars isn't as prevalent as might be thought, it's worth noting also that, out of the 2525 appraisals made by this group of dealers, only 338 new cars actually have been bought. In other words, 87 per cent of these prospects still are holding off. And still, only 17 per cent of them went to a second dealer for appraisal.—N. G. S.

Piston Head Forms and Their Effects on Heat Transference

Criticism of statements regarding properties of head with uniform thickness not borne out by full analysis of facts.

By P. M. Heldt

IN the Sept. 23, 1926, issue of *Automotive Industries* an article by the writer appeared in which it was shown that for a given amount of metal in a piston head of given diameter, the drop in temperature from the center to the circumference will be a minimum if the head is of uniform thickness throughout, and the conclusion was drawn from this that, since the circumference of the piston head is kept at a substantially uniform temperature by its proximity to the cooling water, this form of piston head gives the least maximum temperature and therefore is least likely to cause trouble from pre-ignition. Conversely, for a given maximum temperature of any point of the piston head, it would be possible to do with less material in a head of uniform thickness than with any other type.

Exception to this conclusion is taken by M. de Fleury, who, in an article in *La Technique Automobile et Aerienne* for the first quarter of 1927, writes as follows:

"The conclusions of the problem formulated mathematically by Mr. Heldt are incomplete and consequently erroneous, for the reason that his calculation bears only on the drop in temperature from the center of the piston head to the circumference.

"In reality it is the local absolute temperature of the piston which counts in the systematic or accidental phenomena of decomposition of the oil and of carbonization.

"Now, this absolute temperature is not merely a function of the temperature drop, but also of the temperature at the point B of the piston. This latter decreases at the same time that the thickness E at the circumference increases.

"Complete calculation shows, moreover, that between the inverse effects of the increase of thickness E and the profiling of the piston head on the temperature at the circumference of the piston head and the drop in temperature, there is an optimum law which corresponds to a minimum local absolute temperature for piston heads of the same weight.

"This optimum always corresponds to a conical profile of convex generatrices more or less similar to the parabolic form, according to the volume which it is desired not to exceed (Fig. 1).

Piston heads of uniform thickness (Fig. 2),

on the contrary, are subject to the disadvantage that they depart from the optimum which lies between the head of uniform thickness and the conical head with straight generatrices (Fig. 3).

"What there is incomplete in the data of the problem as posed by Mr. Heldt will be clear if the argument is carried to the extreme as follows:

"For Mr. Heldt the best profile would be that for which the drop in temperature from the center to the periphery were the least, that is to say, nil. Now, that would be exactly the case for a lenticular form of head (Fig. 4) with a thickness e at the periphery equal to zero. Such a piston would not carry off any heat by conduction, and its temperature would be uniform throughout and near to 500 deg. C., the mean temperature of the gases.

"The accompanying diagram shows the advantages of the conical head over the uniform thickness head from the point of view here under consideration.

"The piston head with a convex conical form, moreover, reveals itself still superior, with a reduced drop in temperature at the center and a temperature at the periphery intermediary between those of the two profiles shown.

"It is to be noted that profiles with convex generatrices are duly patented in all the principal countries and that the licensees under the French patent are the forges de Crans and the Floquet establishment."

In reply to the above criticism I wish to say that my analysis of the problem was based not only on the temperature drop in the piston head between the center and the circumference of the head, but also on the assumption that all of the heat absorbed by the piston head from the burning gases is carried off to the cylinder walls, and that there is a material heat flow through the piston head in the radial direction, so that the center of the piston head, which naturally is the hottest spot under these conditions, does not attain an excessive temperature. In M. de Fleury's extreme case, that of a piston head of conical form with a circumference of no thickness, he introduces an infinite resistance to heat flow to the cylinder wall. If you introduce such a resistance anywhere in the path of heat flow, you check the flow, and the

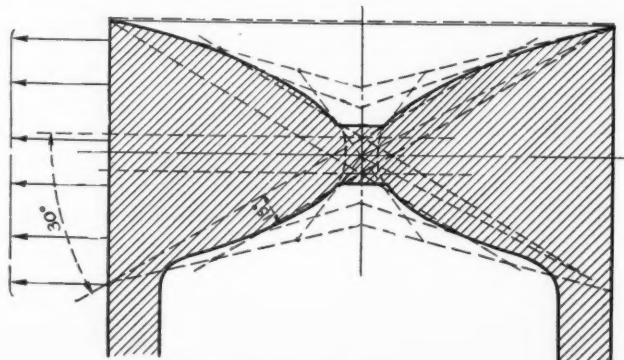


Fig. 1

parts of the path of heat flow ahead of this point tend to assume the temperature of the source of heat.

On the other hand, any reduction of the resistance to heat flow of any portion of the path (everything else remaining the same) will result in a decrease in temperature at all points of the path ahead of this section, starting from nothing at the source of heat.

M. de Fleury seems to agree with me that in the conical type of head there will be a drop in temperature 50 per cent greater than in the head of uniform thickness. He indicates by the temperature figures shown in his drawings that he believes any part of the flat head will be at a higher temperature than the corresponding part of the conical head. What he bases these temperature figures on he does not say. That the temperature drop between center and circumference is less in the head of uniform thickness shows that the resistance of this part of the path of heat flow is less than it is in the conical head. This reduction in the resistance of one part of the path without any material change in the resistance of any other part, will result in an increased heat flow.

The assumption of a constant temperature for a circumference of the piston head is not quite correct. Whenever the resistance to heat flow of any part of the path of flow is changed, the temperatures of adjacent parts will be affected thereby. An increased heat flow across the substantially constant resistance down the piston skirt and through the oil film between the piston and the cylinder wall involves a greater temperature drop in this part of the path of heat flow. Hence, the circumference of the piston head will be at a higher temperature in the case of the head of uniform thickness. A greater heat flow from the hot gases in the combustion chamber to the piston head necessitates a greater average temperature difference between the

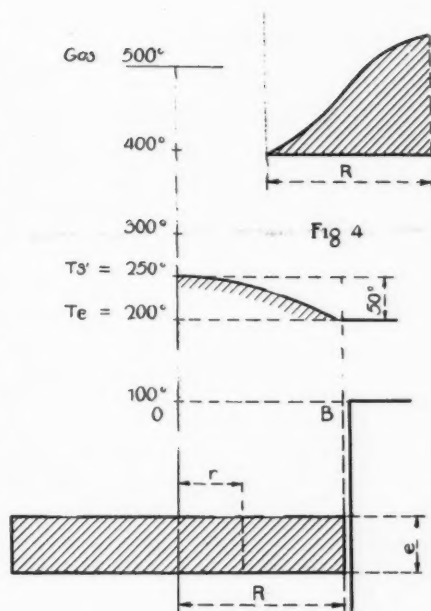


Fig. 2

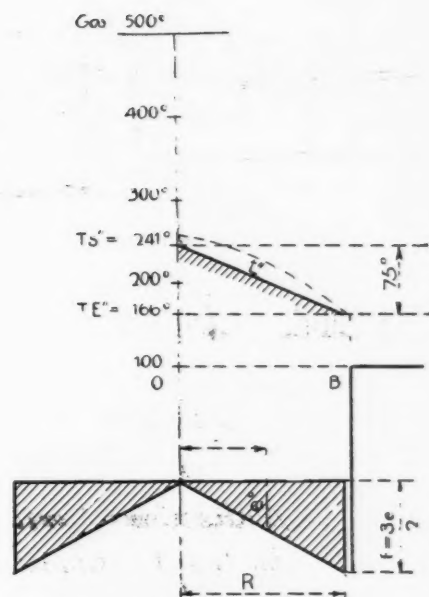


Fig. 3

hot gases and the piston head. Since the edge or circumference of the piston is at a higher temperature in the case of the head of uniform thickness, the difference in temperature between the hot gases and this part of the piston head is smaller; hence the difference in temperature between the hot gases and the center of the cylinder head must be materially greater in order to give an increase in the average temperature difference. Therefore, any decrease in the temperature difference in the piston head (as in the case of the head of uniform thickness) should lower the temperature of the center of the piston head and increase the temperature of the circumference, and not increase the temperatures of both circumference and center as shown in M. de Fleury's drawing.

A change in the form of the head from the "uniform thickness" to the conical form involves a slight shortening of the path down the piston skirt, which is a factor favorable to the conical head, but in practice this would be a small item, especially when it is considered that fillets are always used.

A SECOND, higher powered, edition of the "Cirrus" aircraft engine manufactured by A. D. C. Aircraft, Ltd., of London is now on the British market. While in no way superseding the "Mark I" model, the "Mark 2" has been especially brought out for use in such localities, or in such types of planes where slightly more power than in the former model is desirable. Comparing the new model with the older edition, the major change lies in a 5mm. increase in bore, together with a new shape for the induction manifold. Power has been increased approximately 29 per cent, the engine developing 84 hp. at 2000 r.p.m., as compared to 65 hp. at the same speed for the former model. The weight of both engines is about 268 lb.

Other changes made in the "Cirrus" aside from the increase in bore from 105mm. to 110mm., are found in the cylinder head, pistons and crankshaft. In order

to obtain a better circulation of air between the valve guide bosses, the rocker arm brackets have been redesigned and are now of forged Duralumin bolted to the head, instead of the integrally cast brackets as on the former model.

Changes in the piston are confined chiefly to a re-allocation of the ring grooves which are now all above the piston pin, the lower ring acting as an oil-scraper. Changes in the crankshaft also include the provision of a deep-groove thrust ball bearing at the front of the crankshaft, making it possible to use this engine as a pusher with only a slight difference in the machining of the housing.

Compression ratio of the Mark II is 4.9 to one as compared to 4.64 to one on the Mark I, while the specific weight, due to the increase in power, has been lowered from 4 lb. per hp. to 3.2 lb.

THE FORUM

Front Wheel Drives and Efficiency of Brakes Draw Comment and Discussion

*Adhesion of driving wheels to ground point to be considered
in front wheel drive design. Braking possibilities outlined.*

Front Wheel Drives

Editor, *Automotive Industries*:

I read with pleasure the elaborate article on Front Wheel Drives in *Automotive Industries* of June 4, in which Mr. Heldt carefully analyzed the merits and demerits of this form of drive, and I am glad to say that I agree with him on all points dealt with in the article. However, there is one other thing to be considered when the front wheel drive is to be applied to heavy passenger cars, trucks and motor buses, and that is the adhesion of the driving wheels to the ground.

The adhesion depends on the load on the wheels and on the coefficient of friction; but in most cases in which the driving power is applied to the front wheels the load on the driving wheels is considerably decreased. An example will illustrate this clearly. Take a car of the proportions of the Studebaker Big Six, which weighs 4400 lb. with five passengers. The rear axle load is 2500 lb. and the rear wheel adhesion figures out to

$$F_1 = 0.6 \times 2,500 = 1,500 \text{ lb.}$$

for a coefficient of friction of 0.6 or

$$F_2 = 0.8 \times 2,500 = 2,000 \text{ lb.}$$

for a coefficient of friction of 0.8. Assuming the tires to be of 32 in. diameter and therefore 16 in. radius, the maximum torques that can be transmitted in the two cases are

$$T_1 = (16 \times 1,500)/12 = 2,000 \text{ lb. ft. and}$$

$$T_2 = (16 \times 2,000)/12 = 2,667 \text{ lb. ft.}$$

If the engine develops a maximum torque of 232 lb.-ft. and the total gear reduction in low gear is 13.8:1, the maximum driving torque on the rear wheels would be

$$13.8 \times 232 = 3,200 \text{ lb.-ft.}$$

which means that under the assumed conditions the wheels would slip, unless the engine power were cut down or the gear reduction decreased. With front wheel drive the limit of the adherence of the driving wheels to the ground will be attained far earlier, owing to the smaller proportion to the load on them.

The proportion of the load on the front wheels can be increased only slightly by moving the center of gravity of the car and load forward, if the present standard design is to be maintained. The coefficient of friction can be increased by applying sand to the track or by

developing new tire profiles which are more efficient in that respect.

MAX R. ZEHLIN, Dr. Eng.

Brake Efficiency

Editor, *Automotive Industries*:

The article on Brakes appearing in your issue of June 14, page 858 et seq., contains some very valuable food for thought. As Mr. Parks says, a science of brakes is needed, and to assist in developing such a science, test records of brake performances are absolutely necessary. The average engineer thinks his brakes are good because they appear to him a little better than anything he has as yet tested. He makes an improvement which increases the efficiency of his brakes by possibly 10 per cent and feels well satisfied with the result. He does not realize that this may mean that he has increased the efficiency of his brakes from 10 per cent to 11 per cent, when rating such efficiency from the theoretically perfect 100 per cent.

In 1924 the writer made a survey of the efficiency of brake equalization by counting single and double marks on the road and found that a little over 10 per cent showed approximate equalization. The tests made by Mr. Parks appear to confirm these figures.

Several years ago we were content to utilize in the steam engine about 7 per cent of the power available in the fuel, and in comparison with the above, 10 per cent efficiency in the equalization of brakes is not so bad. The question is not a comparative one, however, but is "How much efficiency is it possible to obtain?" A study of the principles of torque equalization of brakes through their anchorages will convince the engineer that an efficiency of 80 to 90 per cent can be easily obtained and at no appreciable increase in cost. This means more uniformly powerful brakes, safer brakes under adverse conditions, freedom from frequent brake adjustments, less severe stresses on axles and springs and no stresses on steering gear, longer life of brake lining and tires.

Pressure equalization has been fooling the engineers and the public for so many years that it would appear about time to discharge this unfaithful servant and employ one capable of accomplishing the results desired.

GEORGE L. SMITH, United States Ordnance Co.

States Increase Debts for Highway Building

Realization of economic value of good roads leads to continuance of development throughout nation.

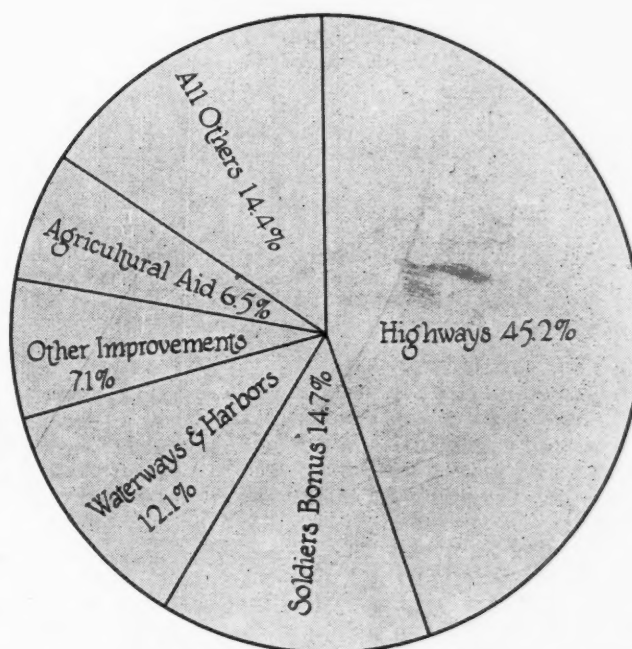
CONSTRUCTION of highways and bridges continue to be the items of expenditure of most importance in state indebtedness in this country since they make up 45.2 per cent of the total state indebtedness in 1927 having increased from 40.2 per cent in 1926. Total highway indebtedness outstanding among the various states in 1927 is \$834,467,058 according to a survey recently made by The Bank of America.

Although this total appears to be a huge sum and makes up nearly half of all the bonded indebtedness of the states, still it represents a per capita debt of only \$7.12 which, in consideration of the immense advantages accruing to all citizens of the country, whether important users of the highways or not, does not seem very high.

The interesting thing about this, the development of debts for road building is the very rapid growth which has taken place during recent years when state legislative bodies have come to realize the very great influence which a system of improved highways has upon the general prosperity of the country, and, particularly of the specific state in which the highways are located. In 1922 the per capita indebtedness for highways was \$3.50 so that within the last five years it has more than doubled.

New York Spends Most

The greatest expenditures for good roads have been made by the State of New York which now has an indebtedness for this purpose of \$107,600,000. Pennsylvania is second with nearly \$98,000,000 of highway indebtedness while Illinois, North Carolina and California follow closely on the heels of these two in the order named.



Purposes of State Indebtedness

Pennsylvania has made the largest proportionate increase in expenditure for roads in the past two years with more than 100 per cent increase. During the same period West Virginia has increased its debt for highway purposes from \$30,000,000 to \$43,900,000 or 43 per cent.

Twenty-one states have no indebtedness for highways. These include Arizona, Arkansas, Connecticut, Florida, Georgia, Indiana, Iowa, Kansas, Kentucky, Mississippi, Montana, Nebraska, North Dakota, Ohio, Oklahoma, South Carolina, Tennessee, Texas, Vermont, Washington and Wisconsin. Two other States, Louisiana and Nevada, are indebted for \$500,000 or less.

Eleven states including these two are indebted for less than \$10,000,000 while only six are bonded for highway purposes for more than \$50,000,000.

Of course, these figures do not represent the total expenditures upon roads and bridges, since very large sums of money have been spent for these purposes by the Federal government and by counties and municipalities. The total sum thus expended is huge and is a fair criterion of the importance placed upon road transport facilities by the American people. And there is no evidence yet that their confidence has been misplaced in looking to good roads and better highway transportation means as an important influence in attaining and maintaining general prosperity.

Purpose of Debt	Amount Outstanding		Per Cent	
	1925	1927	1925	1927
Highways	\$626,852,350.00	\$834,467,058.05	40.2	45.2
Soldiers' Bonus	287,097,600.00	271,528,000.00	18.4	14.7
Waterways and Harbors ..	220,141,800.00	222,508,800.00	14.1	12.1
Other Improvements	108,130,912.00	131,257,412.00	6.9	7.1
Funding Operations	106,735,471.27	115,367,624.28	6.8	6.3
Agricultural Aid	74,822,839.39	119,264,339.39	4.8	6.5
Welfare Institutions	49,002,250.00	53,457,750.00	3.2	2.9
Miscellaneous	27,960,909.55	30,137,697.07	1.8	1.6
Public Buildings	27,599,523.26	17,845,523.28	1.8	.9
Education	17,002,990.67	35,984,086.11	1.1	1.9
Other Military Purposes ..	13,395,787.54	14,295,287.54	.9	.8
Total	\$1,558,742,433.68	\$1,846,113,577.72	100.0	100.0

British Firm Develops Interesting Special Purpose Trucks

Height of body adjustable on one Vulcan model, to facilitate loading. Another has extra long and wide frame to provide greater space for light, bulky loads.

By M. W. Bourdon

TWO rather interesting special purpose truck models have recently been developed by the makers of Vulcan trucks, Southport, England. One is a special body fitted with a lifting mechanism so that the loading height of the truck may be adjusted to agree with varying heights of loading platforms, while the other is an especially long and wide framework for carrying light bulky loads.

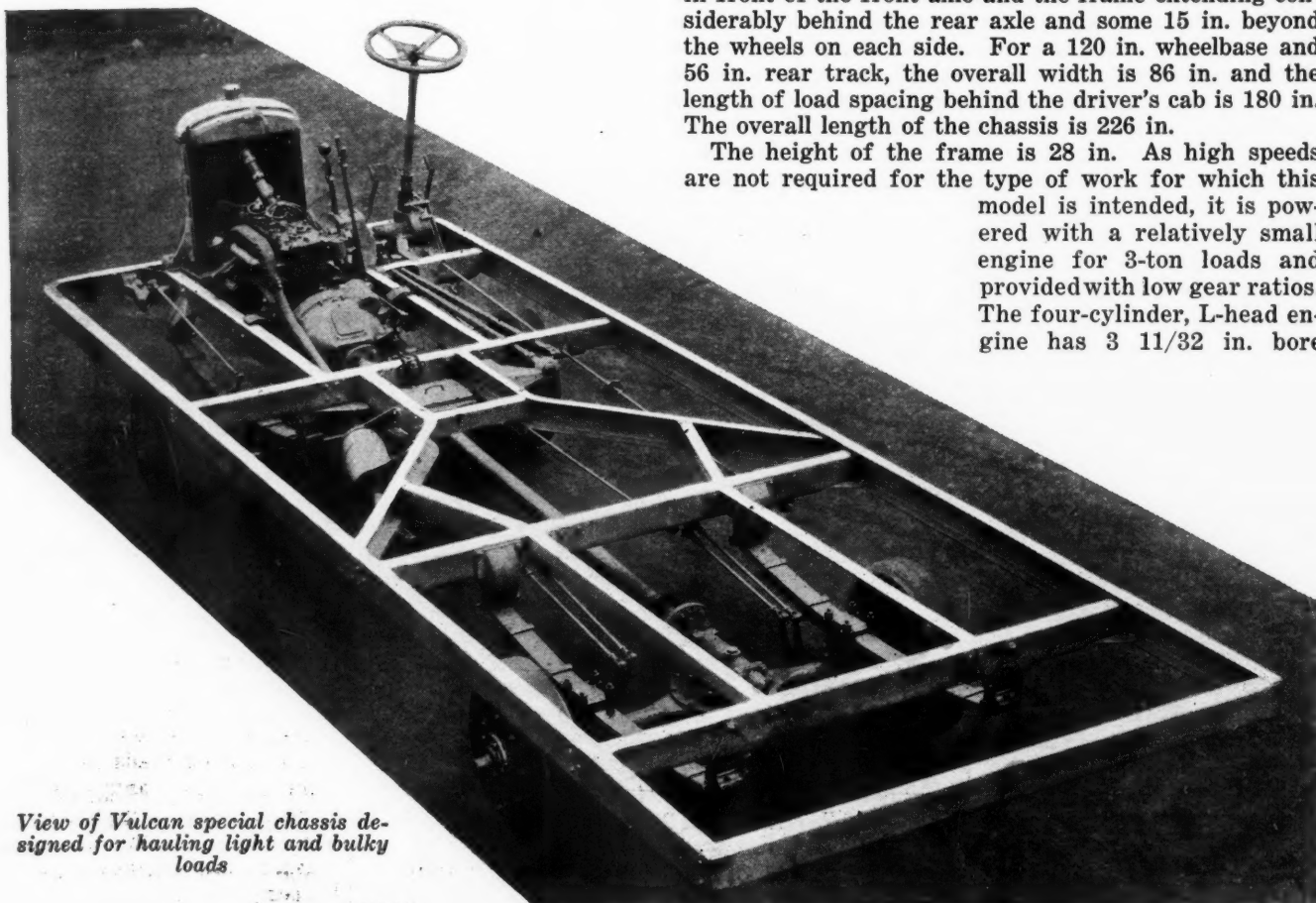
In the first design the lifting mechanism consists of a horizontal ram carrying rollers that bear against cam-contoured brackets on a hinged frame, as in a dump body. To secure a vertical lift the body itself is also hinged to the forward end of the tipping frame, while another frame, centrally swivelling on the side members

of the tipping frame, is pivoted to the rear end of the body and at its lower end carries rollers bearing against the undersides of guides bolted to the chassis. These cross pivoted frames give a "lazy-tongs" movement and the body, in rising, does so with very little horizontal movement.

At its lowest level the floor is 54 in. above the ground while the maximum lift is 24 in. An indicator graduated in inches located in the cab tells the operator how high the floor is raised. Controls consist of a clutch lever for engaging the power take-off and a three-position lever for operating the control valve for raise, lower and hold positions.

To carry economically light bulky loads, the second truck mentioned has the engine and driver's seat located in front of the front axle and the frame extending considerably behind the rear axle and some 15 in. beyond the wheels on each side. For a 120 in. wheelbase and 56 in. rear track, the overall width is 86 in. and the length of load spacing behind the driver's cab is 180 in. The overall length of the chassis is 226 in.

The height of the frame is 28 in. As high speeds are not required for the type of work for which this model is intended, it is powered with a relatively small engine for 3-ton loads and provided with low gear ratios. The four-cylinder, L-head engine has 3 11/32 in. bore



View of Vulcan special chassis designed for hauling light and bulky loads.

and 5 $\frac{1}{8}$ in. stroke, while the ratios furnished by the rear axle overhead worm gear drive and the four-speed gearset are 6.5, 10.9, 16.4 and 30.4 with 35.7 to 1 on reverse.

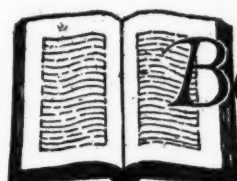
The chassis illustrated weighs 3700 lb. and is made of standard parts throughout except for the gearshift controls. It is claimed that with the 120 in. wheelbase the platform area for goods is 33 per cent greater than that of a normal 3-ton truck. Better load distribution is also claimed and the engine is said to be more easily detachable from the frame. Expanding four-wheel brakes are fitted to 20 in. wheels with 5 in. solid tires.

Comparisons between the Vulcan standard 3-ton truck, 120 in. wheelbase and this special model are:

	Standard	New Model
Turning circle . . .	50 ft.	38 lb.
Chassis weight . .	5,600 lb.	3,700 lb.
Floor space	79 sq. ft.	100 sq. ft.



Detail of elevating mechanism employed in new Vulcan lifting truck body



Books for the Business Bookshelf

A GREAT deal of research work has been done on the problem of the fatigue of metals during the past two decades, but the records of this research are somewhat scattered and difficult of access by machine designers, to whose attention they must be brought before any practical results can be expected from the work. The Engineering Foundation therefore asked Prof. H. F. Moore of the University of Illinois Engineering Experiment Station, who has been prominent in this line of research, to prepare a small handbook for the use of engineers, giving the results of the research work in handy condensed form. With the assistance of a number of other American investigators, Prof. Moore has prepared a small volume entitled "Manual of Endurance of Metals under Repeated Stress," which is being published by the Engineering Foundation, 29 West 39th Street, New York.

Introduction to Aeronautics

Airmen and Aircraft. Henry H. Arnold. The Ronald Press Co., New York. 216 pp. \$3.50.

AS its subtitle states, this book is an introduction to aeronautics and is designed to give to readers unfamiliar with the subject a general view of aviation progress and its present condition. It includes non-technical descriptions of airplanes, airships and balloons, information about famous aviators, qualifications for air pilots and various other items of information which are likely to be of interest to those who are just developing an interest in aviation. It is one of a series of books which make up the Ronald Aeronautic Library.

The Practical Side of Flying

Airports and Airways. Donald Duke. The Ronald Press Co., New York. 178 pp. \$5.

THIS is another volume of the Ronald Aeronautic Library and contains a great quantity of very practical information regarding the location, cost, operation and maintenance of airports and airways. The author

is chief of the Airways Section, U. S. Army Air Corps, and appears to be exceptionally well qualified to dispense authoritative information on the subject. The book has been written for municipal authorities contemplating or operating airports or for individuals who are interested in such ventures. It is full of practical hints of design, layout, operating methods, cost determination and all the many other items of information which are necessary to the successful operation of airports and should prove of considerable value in the absence of any widespread knowledge of the subject.

A Book for Inventors

Inventions and Patents. Milton Wright. McGraw-Hill Book Co., New York. 225 pp. \$2.50.

FROM the large number of patent suits which continue to clutter up the courts it appears that still more of the sort of information contained in this book is needed by inventors and their backers. While the actual job of drawing up patent claims is usually left to the patent attorney, there are innumerable items which the inventor should consider in order to get the most value from his invention. The present book is devoted to outlining these points of interest and suggesting to the reader how each of them might be handled satisfactorily.

PRODUCTS of the automotive industry were among the ten lines of industry recommended to the Japanese government for Government-aid to increase production and thus lessen imports. The recommendations were made by the National Products Encouragement Commission, of Tokyo.

ACCORDING to a recent census there are now 14,000 taxicabs in service in Paris. Of this number 3140 belong to the Compagnie Francaise, 1059 to the Citroen Co., 1059 to the General Co., and 560 to the Metropolitan, while 3300 are operated by small companies and 4624 by individual owners.

U. S. Exports of Cars, Trucks, Tires and Parts

COUNTRIES	PASSENGER CARS										TRUCKS					
	Up to \$500		\$500 to \$800		\$800 to \$1200		\$1200 to \$2000		Over \$2000		Up to 1 ton		1 to 2½ Tons		Over 2½ Tons	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Austria																
Azores and Madeira Islands			5	\$3,035	1	\$880	1	\$1,179			9	\$3,643				
Belgium	294	\$132,688	508	274,838	356	311,922	208	248,253	52	\$124,076	624	268,940				
Bulgaria	3	1,154	1	708							1	303				
Czechoslovakia	6	2,155	40	25,296	16	13,040	16	18,263	7	13,805	13	5,458				
Denmark and Faroe Islands	1,064	397,251	864	490,966	392	325,211	48	79,436			1,394	596,940	11	12,467		
Estonia									1	3,040						
Finland			97	59,227	202	169,684	94	113,957	24	47,482	19	15,307	19	22,922		
France			2	1,044	53	47,225	50	63,658	22	68,385	12	5,504				
Germany	9	3,608	240	142,784	356	318,984	239	285,291	92	239,476	72	30,493	10	11,552		
Gibraltar																
Greece	96	35,061	35	20,271	7	5,903	5	6,582			38	14,082	2	2,064		
Hungary			14	7,067	12	9,580	10	12,096	1	1,663			2	2,980		
Iceland					1	706										
Italy	13	4,006	21	11,142	25	20,863	11	12,986	3	10,366	66	16,534				
Latvia					1	926	1	1,246	1	2,300			3	2,765		
Lithuania			6	3,801												
Malta, Gozo and Cyprus			2	1,249	4	3,383										
Netherlands			111	64,953	117	99,535	91	109,016	16	37,419			8	11,595		
Norway	1	354	149	80,858	100	81,067	67	77,051	16	30,568	6	4,305	21	21,722	1	\$2,993
Poland and Danzig	2	936	40	23,502	33	27,981	6	6,919								
Portugal	14	6,286	65	33,561	44	36,299	28	33,566	2	4,544	60	39,831	2	4,326		
Rumania	284	100,942	24	14,475	24	19,397	36	37,635	4	9,483	313	107,273	3	4,100	1	1,150
Russia	2	710			1	930					7	14,369				
Spain			121	65,049	281	248,569	154	203,204	86	193,499	145	73,983	17	23,777		
Sweden	2	787	287	171,068	383	316,608	137	162,329	36	76,825	11	8,714	68	76,508		
Switzerland			23	14,509	12	11,224	27	33,522	27	60,777						
Turkey	37	12,129	42	20,272	21	16,580	12	13,003	6	13,118	28	11,286	2	5,076		
United Kingdom	3	1,203	733	443,342	588	491,083	49	67,065	90	218,379	458	209,271	4	3,520		
Irish Free State											4	2,639				
Yugoslavia	1	354	1	612	17	14,465	4	4,183	1	2,798						
United States																
British Honduras																
Canada	501	137,408	3,841	2,146,640	1,170	1,096,468	600	780,211	140	384,215	141	91,093	274	445,082		
Costa Rica	2	745	1	738	20	18,174	8	8,424	8	17,222	1	797				
Guatemala					2	1,446	15	17,936	3	6,334			10	14,158		
Honduras	1	349			6	4,458	1	1,303			7	6,415	2	1,455		
Nicaragua					1	957					2	1,196				
Panama	1	500	13	7,139	5	4,694	7	8,831			18	12,220	2	3,935	39	160,616
Salvador	1	338	3	1,932	15	12,561	2	2,171	3	6,008	4	1,478			1	1,899
Mexico	258	93,765	176	104,704	128	112,266	53	65,772	19	42,647	118	79,560	45	52,102	2	9,497
Miquelon											4	1,525				
Newfoundland	14	1,471	32	17,903	22	17,144	10	11,523	1	1,663	3	1,790	1	1,357		
Barbados																
Jamaica	6	2,163	42	22,460	18	14,459	7	10,702	1	1,871	13	4,329				
Trinidad					5	4,030	2	2,558			3	2,207	7	8,226		
Other British West Indies	7	1,525	1	552	6	5,079	1	1,016			3	1,227				
Cuba	166	49,603	288	138,606	104	85,162	52	69,197	9	21,255	163	70,579	26	31,111	28	127,193
Dominican Republic	13	3,870	76	39,272	5	4,311	12	16,989	1	1,844	12	4,720	23	59,540		
Dutch West Indies	3	1,234	2	1,120	7	5,759	7	8,126			9	3,763	2	2,025		
French West Indies	1		1	475	1	723					5	1,775				
Haiti	1	388	2	1,147	4	2,986	4	4,168			4	921	3	4,087		
Virgin Islands	2	674	3	1,629			1	1,300								
Argentina	1,072	416,090	737	455,322	898	727,806	178	226,768	77	158,522	497	256,407	76	111,039	33	76,243
Bolivia			2	1,249	1	742	9	11,298			2	1,791	3	5,013		
Brazil	563	210,730	177	103,893	664	536,343	76	90,902	54	114,278	797	355,547	22	24,305	8	16,194
Chile	14	4,736	21	12,054	21	16,603	24	28,879	10	21,271	3	2,057	14	19,318	4	11,672
Colombia	7	2,398	7	3,768	45	40,980	36	45,022	13	35,912	24	18,842	42	56,455	5	14,834
Ecuador	8	2,598	8	3,765			7	8,237	4	6,326	11	6,005	1	1,874		
British Guiana																
Dutch Guiana																
Paraguay			5	3,123	4	2,997	4	4,411					4	4,637		
Peru	10	4,520	22	12,712	31	27,000	10	11,252	3	7,688	26	10,485	35	121,623		
Uruguay	49	14,853	68	41,414	82	69,802	26	30,802	2	5,281	23	15,155	18	41,879	4	19,816
Venezuela	39	14,736	9	5,579	45	37,430	51	60,203	13	29,201	41	19,155	13	25,891	5	17,726
Aden	5	1,860			7	5,608					2	640				
British India	6	1,845	68	39,938	184	151,310	22	27,202	12	25,260	230	175,884	10	12,089		
Ceylon			7	3,916	17	14,993	12	13,286			39	25,640	24	28,113	1	2,755
Straits Settlements			50	31,213	21	17,174	14	15,390	1	1,844	7	4,651	18	21,483	2	5,460
China	46	15,304	28	18,795	30	26,194	7	8,462			38	17,151	5	6,402		
Java and Madura	96	45,614	107	62,472	183	151,305	31	39,896	25	53,390	105	53,113	23	26,501		
Other Dutch East Indies			15	8,845	39	33,600	13	15,679	4	8,695	18	14,540	4	4,366		
French Indo China	12	4,210									10	3,425				
Hejaz, Arabia and Iraq	30	10,524	5	2,800	3	2,650					3	2,983	2	3,339		
Hongkong	38	11,960			12	10,206					40	12,910				
Japan	40	11,477	110	72,681	123	103,939	54	71,453	11	25,350	28	19,447	14	24,123		
Kwantung			1	736	6	5,428					12	4,110	2	2,548		
Palestine and Syria	50	16,500	51	30,545	47	36,546	28	34,052			2	2,048	1	1,289		
Persia	41	14,384					2	2,507			18	7,567	3	4,055		
Philippine Islands	128	47,610	66	43,729	109	99,541	61	84,943	24	52,242	149	62,984	39	54,545	1	4,924
Siam			5	2,989	4	3,252					4	2,721				
Turkey	24	8,520	6	2,519	4	3,189										

for May, 1927

Canadian Exports

ELECTRIC VEHICLES		PARTS		TIRES				PASSENGER CARS						TRUCKS		PARTS		COUNTRIES	
				Casings		Inners		Solids		Up to \$500		\$500 to \$1000		Over \$1000					
No.	Value	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value		
		\$8,252	2,888	36,694	1,607	\$3,506												Austria	
		297	8	160														Azores and Madeira Islands	
		90,140	691	12,317	136	356		4	\$1,050								\$4,178	Belgium	
		454	20	206				4	1,667	2	\$1,167				8	\$3,098		Bulgaria	
		4,565	4,665	84,407	215	519												Czechoslovakia	
		151,517	9,278	97,698	1,565	5,879	136	\$5,103					5	\$5,702			1,177	Denmark and Faroe Islands	
		523	135	1,857	180	418	10	373										Estonia	
		31,534	3,967	66,181	3,710	9,535		22	10,634	26	15,000	21	23,160					Finland	
		94,180	3,377	58,036	1,139	3,247	18	429										France	
		404,285	10,673	138,380	6,136	14,859							12	16,474			4,838	Germany	
		929																Gibraltar	
		11,012	3,503	42,392	439	865	121	3,233										Greece	
		10,663	264	2,851	152	346	4	131										Hungary	
		83	12	155	12	24												Iceland	
		30,221	1,965	25,415	1,433	3,694							1	1,486				Italy	
		676	1	17	1	2												Latvia	
		366	27	269	35	56			29	10,832	1	553	1	1,133	4	1,550		Lithuania	
		68,039	7,092	126,171	3,302	8,858												Malta, Gozo and Cyprus Is.	
		24,093	2,714	47,683	2,449	5,680	46	2,100	75	36,095	52	30,600	21	23,405			37	Netherlands	
		571	3,486	35,885	2,926	4,297						1	728					Norway	
		14,045	1,124	11,916	332	572	16	495										Poland and Danzig	
		3,404	1,424	22,561	1,256	1,840			166	70,894	6	5,564	10	11,741	22	8,517		Portugal	
		5,964	14	306	14	31												Rumania	
		209,091	7,814	85,066	7,522	22,005	138	4,284									11	Russia	
		60,998	8,885	146,264	5,740	14,703	10	329										Spain	
		12,086	4,280	79,105	2,370	7,727	16	1,016	2		970	4	3,043				50	Sweden	
		1,863	543	6,022	42	142			8	3,334								Switzerland	
1	\$1,900	481,064	13,702	154,858	7,339	16,840	204	4,405	102	29,171	216	180,551	101	122,534	1	1,140	23,567	Turkey	
		19,728	400	5,100	100	275											32	United Kingdom	
		496	825	9,223	640	2,054	27	912	33	13,755			3	3,418				Irish Free State	
									8	1,850	4	2,672					13,964	Yugoslavia	
		785	16	112	4	8												United States	
8	12,731	4,666,349	2,940	31,700	4,369	9,751	57	2,349										British Honduras	
		4,105	446	7,106	202	600	10	251	8	3,065	3	1,536	2	2,128	8	3,097	54	Canada	
		19,314	922	18,473	821	2,232			6	2,431	1	543	2	2,264	16	6,195		Costa Rica	
		3,212	206	3,108	300	618	20	660										Guatemala	
		2,394	27	367	39	172	2	160										Honduras	
		16,636	1,593	15,100	1,231	2,176	90	1,889	25	10,268							25	Nicaragua	
		6,817	417	7,669	432	1,231	70	2,269									15	Panama	
		119,391	6,701	84,276	6,069	12,565	204	8,516	12	4,292	3	2,708						Salvador	
												1	526					Mexico	
85		2,542	259	2,854	369	638	2	37	11	3,476							21	Miquelon	
		3,280	18	140	12	15	9	308										Newfoundland	
		11,153	59	880	35	59			126	40,449	12	9,417						Barbados	
		12,933	494	7,405	64	152			12	4,166	10	7,090					48	Jamaica	
		4,554	28	333	12	30	2	61	7	3,007	4	2,551						Trinidad	
		103,543	11,438	98,991	8,291	11,677	632	20,000						9	10,337		420	Other British West Indies	
		12,716	840	13,457	864	1,956	70	2,323	2	958	3	2,566						Cuba	
		7,953	136	1,851	44	231			5	2,175	2	1,086						Dominican Republic	
		629	26	371								2	1,791					Dutch West Indies	
		6,317	464	9,171	851	1,746			11	4,430			1	1,114				French West Indies	
		1,610	8	40														Haiti	
		589,337	23,329	261,905	9,001	16,290	773	22,888	19	7,377	107	74,285	16	17,826			38,431	Virgin Islands	
		8,511	174	2,850	12	49			1	405								Argentina	
		269,781	7,212	83,729	1,261	2,447	147	4,373	1	495	25	20,957	28	30,103			125	Bolivia	
		58,101	827	21,393	86	252	40	1,151	34	15,151	7	4,343	1	1,056				Brazil	
1	574	64,685	2,062	40,085	2,626	7,105	23	1,180	26	10,809	7	5,433	12	14,450	106	43,740	652	Chile	
		1,590	245	3,297	217	487	6	336										Colombia	
		1,484	54	816					9	3,553	6	3,384	1	1,115				Ecuador	
			2	36					1	412								British Guiana	
		2,696	379	4,209	599	1,134			1	417	1	892	1	1,144				Dutch Guiana	
		62,984	2,061	39,391	1,369	4,117	12	361	5	2,256	3	1,628						Paraguay	
		61,518	1,929	24,867	2,494	3,389	125	4,570	16	7,830	9	6,742	5	7,176			89	Peru	
		47,259	2,025	41,950	1,571	5,074	20	548	41	17,081	10	6,289	4	4,457	64	24,778	260	Uruguay	
		100	62	560	132	199			7	2,019								Venezuela	
		107,442	8,225	113,560	4,155	8,700	179	7,184	564	227,372	87	62,709	9	11,566	578	196,836	3,692	Aden	
		6,360	818	12,819	422	1,251	51	1,125	33	12,680	21	15,887	1	1,072			17,916	British India	
		36,878	1,650	17,276	93	207	220	4,777	120	54,308	17	9,494					19	Ceylon	
		75,941	483	5,804	210	359	6	178										Straits Settlements	
		44,531	3,324	35,235	876	2,702	5	279	261	86,345	92	84,390	19	22,552	106	24,964	7,686	China	
		8,465	1,271	14,429	1,039	1,529												Java and Madura	
		435																Other Dutch East Indies	
		3,837	100	869	100	154			30	12,278								French Indo China	
		19,251																Hongkong	
		694,662	9,954	97,392	6,066	10,251	791	15,049	120	46,709	15	13,362					15,071	Japan	
		1,031																Kwantung	
		8,511	1,334	18,074	622	1,369			4	1,940								Palestine and Syria	
		9,099	187	5,109	110	667	23	768										Persia	
		67,077	10,222	138,270	11,502	24,810	633	15,339									222	Philippine Islands	

AUTOMOTIVE **NEWS SECTION** INDUSTRIES

Philadelphia, Pennsylvania

Saturday, July 2, 1927

Sales Continue Downward, June Output About 300,000

PHILADELPHIA, July 2—Automobile sales are considerably under the level of a year ago, but this situation has held true for several months and the current rate of decline does not appear to be greater than the average for the season. Some companies are maintaining high output rates and there have even been periods when deliveries to customers were slow in several popular lines.

New car stocks do not appear to be excessive and the turnover in used cars has reached levels gratifying to the industry, although prices have been so low that the retail end of the business has suffered.

June production will reach about 300,000, against 422,149 in May, a drop of about 30 per cent, but not surprising in view of the fact that Ford has been out of production in preparation for new models. The half year's output is thus about 2,070,000 cars and trucks, a drop of 15 per cent from the corresponding period of 1926, when 2,445,780 vehicles were turned out.

In view of the favorable condition of the sales market, it would not be surprising to the industry if the year as a whole makes a better comparison with 1926 than have the first six months, as Ford's contribution will begin mounting late in the summer. It is believed that a larger volume than usual has been held over awaiting new models in the fall months.

Philadelphia Car Stocks Run Higher Than in 1926

PHILADELPHIA, June 30—Wholesale trade in less expensive cars increased in May, while that in medium and higher priced automobiles dropped materially from the April total, the Philadelphia Federal Reserve Bank reports. Total retail sales declined nearly 3 per cent in value and 5 per cent in number. Compared with the year before, wholesale and retail business in cars of medium and higher prices was much smaller, while sales of automobiles costing under \$1,000 were considerably greater both in value and number.

Sales of used cars, though they decreased slightly in number from April to May, exceeded materially those of the year earlier. Deferred payments on retail sales were under the volume of a month and a year before. The number of new cars held in stock at the end of May was a trifle below that on the same date of the preceding month, a fact which was due solely to smaller stocks of medium priced automobiles. In comparison with a year before, supplies of new and used passenger cars were noticeably heavier.

Chemists to Outline Latest for Industry

NEW YORK, June 29—Experts in many lines will tell just what chemistry and its allied sciences have contributed to the automotive industry and suggest, if possible, some things that they may still contribute at a three-day national symposium to be held, beginning Sept. 6, in connection with the seventy-fourth meeting of the American Chemical Society, at Detroit.

Speakers and their topics at the symposium, which is being arranged under the direction of Dr. Thomas A. Boyd, director of fuel research at the General Motors Laboratories, in Detroit, will include:

J. A. Mathews, Crucible Steel Co. of America, "Iron and Steel"; H. W. Gillett, U. S. Bureau of Standards, "Non-Ferrous Alloys"; Francis C. Frary, Aluminum Company of America, "Aluminum and Its Alloys"; W. C. Geer, B. F. Goodrich Co., "Rubber"; E. W. Tillotson, Mellon Institute, "Glass"; H. C. Mougey, General Motors Research Corp., "Paint, Varnish and Lacquer."

Also Hamilton Bradshaw, E. I. du Pont de Nemours & Co., "Coated Fabrics"; H. A. V. Mory, Bakelite Corp., "Synthetic Resins"; W. L. Reinhardt, Willard Storage Battery Co., "Storage Batteries"; J. B. M. Hill, Tide Water Oil Co., "Lubricants"; D. B. Keyes, University of Illinois, "Antifreeze Compound"; William Blum, U. S. Bureau of Standards, and president, American Electrochemical Society, "Plating"; Charles M. Upham, Highway Research Board, "Road Materials," and Norman Hertz, Max Hertz Leather Co., "Leather."

Continental Pays Dividend

DETROIT, June 29—Directors of Continental Motors Corp. declared the quarterly dividend at the rate of 80 cents a share a year, payable July 30 to stock of record July 15. With this dividend the corporation will have paid to stockholders in 1927, a total of \$1,056,507.

Liner to Catapult Seaplanes from Deck

NEW YORK, June 27—Part of the equipment of the new French liner, Ile de France, due in New York this week, will be seaplanes which may be catapulted from the decks.

The purpose of the planes is to shorten the trans-Atlantic trip for passengers who desire to do so, two days by flying from the ship off the Grand Banks to Canada or seaboard cities.

The planes and catapults are to be added after the ship has completed several trips. The Ile de France sailed from Havre, Wednesday, on her maiden trip. Another feature of the ship is increased capacity for carrying automobiles uncrated.

W. J. Mattimore Succeeds Scharpes at Chrysler

DETROIT, June 30—W. J. Mattimore has been appointed director of advertising of the Chrysler Corp., succeeding C. E. T. Scharpes, resigned. Mr. Scharpes, who has been advertising director of Chrysler for the past two years, is joining McManus, Inc., and will assume his new duties in July.

Mr. Mattimore is well known in automotive advertising circles, having been advertising manager of the Chrysler organization for four years. He retired two years ago, and has since been engaged in the real estate business in Detroit. Mr. Mattimore assumes his new duties July 1.

Chapin Leads in Stand Against High Taxation

NEW YORK, June 30—A committee headed by Roy D. Chapin, president of the National Automobile Chamber of Commerce, reported unanimously against oppressive taxation of motor vehicles and in favor of devoting revenue solely to the maintenance and improvement of roads, according to report received here from the meeting of the International Chamber of Commerce. John N. Willys gave the highway traffic committee an outline of road construction and maintenance here.

Piston Pin Moves Plant

DETROIT, June 29—The Detroit Piston Pin Mfg. Co. will move its plant to Grand Haven, Mich., where it will build a \$15,000 factory.

Wright and Fokker Plan Larger Plane

Will be Capable of Flight to
Japan—Wright Perfecting
New Engine

NEW YORK, June 30—With the safe arrival in Hawaii of the Army flyers scarcely recorded and while the Byrd expedition was winging its flight over the Atlantic, the makers of the planes used in these two flights announced plans for a larger type of plane which will be capable of 72-hour flights. With one of the new type of planes, a flight to Japan was forecast within a year.

Collaborating in the design and manufacture of the plane will be Anthony Fokker, C. W. Lawrence, designer of the Wright Whirlwind engine, and C. H. Colvin, head of the Pioneer Instrument Co. Mr. Fokker disclosed plans for the new plane but declined to say for whom or what purpose it would be built. Mr. Lawrence said the Wright company was perfecting an improved engine of 270 hp., 50 hp. more than the present type, which would consume from 10 to 15 per cent less fuel.

Four Planes Forced Down

BOSTON, June 30—Four of the planes in the National Air Tour were forced to make emergency landings when beset by a storm in making the 165 mile hop from Schenectady to Boston. No one was hurt nor any of the ships damaged. Among those forced down was the Ford transport plane carrying eight persons. The plane cracked a cylinder but this was to be replaced and the ship will resume the tour. Edward P. Warner, assistant secretary of the navy, is making the tour on the Ford plane as an observer.

Wayne Body Made Part of New Paige Company

DETROIT, June 29—The Paige-Detroit Motor Car Co. has completed the purchase of the Wayne body plant from the Graham brothers, marking another step in Paige's expansion plan. The transaction was closed without profit to the Grahams, the brothers having turned the plant over to Paige at the price paid by them shortly after they had announced plans to gain control of Paige. The plant was recently appraised at \$1,250,000. It comprises 200,000 sq. ft. of space and this will be augmented by an additional 40,000 ft. Capacity operations on bodies for Paige cars is expected by fall.

Federal Offers New Trucks

DETROIT, June 28—Federal Motor Truck Co. announces three new models, a one-ton, bevel gear Model F-6; a two-ton worm drive Model T-6W, and a two-ton, bevel gear Model T-6B. All three designs feature interchangeability of engines and either a Continental

six-cylinder or a Waukesha four-cylinder can be used.

Wheelbase of the one-ton model is 124 in. providing 91 in. back of the seat. The two-ton models have standard wheelbases of 143 in. to provide loading space of 119 in. while optional lengths of 115, 168 and 180 in. are offered.

Detroit Brass Sold to Anaconda Copper

DETROIT, June 29—Stockholders of the Detroit Brass & Rolling Mills approved a plan Tuesday whereby control of that company passes into the hands of the Anaconda Copper Mining Corp. The mining corporation through a subsidiary, the American Brass Co., purchases the stock of the rolling mills. The deal involved approximately \$13,000,000.

The business will be conducted in the future by the American Brass Co. as its Detroit branch and according to Lewis H. Jones, president of the Detroit concern, the new owners plan to enlarge the plant and carry on the same policies as in the past. Mr. Jones has been president of the company more than 40 years, and with the other directors, Richard P. Joy, Arthur H. Buhl, Lawrence Buhl, Henry B. Sheldon, Andrew J. Peoples, Frank H. Hoffman and Alexander Henderson, will continue to be associated with the operation of the plant.

A.C.F. Earnings Decline, Fageol Suit Adjusted

NEW YORK, June 30—American Car & Foundry Co. and its wholly owned subsidiaries, report net earnings for the year ended April 30, 1927, as \$4,593,377, a decrease of \$1,509,521 from the preceding year. W. H. Woodin, in his report, attributes the shrinkage in earnings to increased competition in the railroad equipment field due to decreased orders. The activities of the company in the automotive field are referred to as affording the company a more varied field for its activities.

Amicable settlement of the suit brought by Fageol Motors Co., against Fageol Motors Co. of Ohio, which is controlled by American Car & Foundry Motors Co. has been made, according to C. S. Sale, president of American Car & Foundry Motors. The suit covered the right to use the name Fageol and other considerations. The agreement between Fageol Motors and the Ohio company called for a minimum annual royalty of \$75,000 and a maximum of \$300,000.

G.M.A.C. Increases Capital

NEW YORK, June 30—General Motors Acceptance Corp. has sold to General Motors Corp. an additional 100,000 shares of its capital stock at \$125 a share, making an addition to its capital fund of \$12,500,000.

Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co.

NEW YORK, July 1—A decline in the volume of brokers' borrowings in New York has been accompanied by a broad but not violent downward movement in stock prices. In industry, the chief development has been a further sharp recession in steel production. Trade in general is under the influence of summer dullness. Commodity prices declined rather abruptly last week, while money rates displayed a firmer tendency.

FREIGHT CAR LOADINGS

Railway freight car loadings continued below the level of a year ago during the week ended June 11, numbering 1,028,305, as against 911,298 in the preceding week (a holiday week) and 1,052,471 in the corresponding period last year. Loadings for the year to date total 23,292,169, which compares with 22,917,146 a year ago and 22,350,734 two years ago.

BANK DEBITS

Bank debits to individual accounts reported to the Federal Reserve Board for the week ended June 22 were fractionally larger than the total a week earlier and 10.5 per cent above that of a year ago.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices stood at 139.3 last week, the lowest level reached so far this year. A week earlier the index stood at 140.4 and four weeks earlier at 139.9. The monthly retail food price index of the Department of Labor rose from 153.6 in April to 155.4 in May.

FEDERAL RESERVE STATEMENT

Bills and securities held by the Federal Reserve banks declined \$99,400,000 during the week ended June 22, with gains of \$77,700,000 in discounts and \$700,000 in open market purchases more than offset by a decrease of \$177,900,000 in holdings of government securities. Note circulation declined \$8,900,000 and deposits \$108,900,000, while reserves increased \$8,400,000. The reserve ratio rose from 76.4 to 78.8 per cent.

During the same period, loans of reporting member banks declined \$28,000,000, about \$20,000,000 of the decrease being in security loans and the remainder in "all other" (mainly commercial) loans. Investments declined \$114,000,000 and net demand deposits \$472,000,000, while time deposits increased \$15,000,000 and borrowings from the Federal Reserve banks \$73,000,000. Loans to brokers and dealers, secured by stocks and bonds, made by reporting member banks in New York City declined \$44,000,000.

The call loan rate remained fixed at 4 per cent throughout last week, as against a range of 4 to 4½ per cent a week earlier.

Nash Lowers Prices on Seven 1928 Cars

Body Lines More Sweeping
and Lower Wheels and
New Springs Used

KENOSHA, June 29—Three entirely new series of cars, including 21 models on four different chassis lengths were announced today by Nash Motors Co. The former Light Six name has been changed to Standard Six, the other two series continuing to be known as the Special Six and Advanced Six. Prices are reduced on two models in the Standard Six series and on five Advanced Six models on the 127 in. wheelbase. Models on which reductions have been made, and the new old and old prices, are as follows:

Standard Six		
	New	Old
Two-pass. coupe	\$875	\$925
Five-pass. two-door	895	925
Advanced Six		
Seven-pass. tour.	\$1,440	\$1,490
Five-pass. sedan	1,545	1,695
Five-pass. Victoria	1,595	1,790
Five-pass. Amb's'r	1,925	2,090
Seven-pass. sedan	1,990	2,090

Refinements on all models include a new radiator design, lower and more sweeping body lines and new color combinations. Mechanical changes on all models include new springs of a secret alloy steel which afford greater riding comfort. Smaller wheels are used, bringing the cars lower.

The size of the engine in the Standard Six has been increased and the seven-bearing crankshaft has been made larger. Shock absorbers are installed at the front. The engine is insulated with rubber at all points of contact with the frame to reduce road shocks.

Other improvements on this model are a new type of head lamp, a new four-bladed fan, a new stop light switch, a heavier oil pump cover plate, new parking lights, new instrument panel indirectly lighted, new remote control door locks, new light control on the steering wheel and new body hardware of special Nash design.

Many Detail Changes Made

On the Special Six and Advanced Six, the clutch, flywheel and crankshaft are now balanced as a unit, body quietness is increased by use of a fender welt consisting of a contoured piece of heavy fabric-covered felt, battery and tool boxes are now entirely encased, new friction plates are added on the front brake supports, carburetor heat control, valve and new heat indicator are on the instrument panel, the frame is reinforced for rigidity, the parking brake lever is heavier and longer, there is a new nickel steering column, improved horn and new type of foot accelerator.

MacMillan to Use Snowmobile in Arctic

WISCASSET, ME., June 25—When Captain Donald B. MacMillan left here today on his Arctic exploration trip he took with him a motor vehicle, the first one that will ever travel over the bleak regions of ice and snow. It is a Snowmobile, invented by Virgil D. White, of West Ossipee, N. H., a combination of automobile, tractor and sled. Governor Spaulding of New Hampshire backed Mr. White in producing this vehicle and many of them are used in that state by rural free delivery carriers and business men now.

25 Models Compose Moon 1928 Offering

ST. LOUIS, June 28—The Moon Motor Car Co. line for 1928 will be composed of 11 models in the 6-60 line with a price range of \$995 to \$1,295; six Series A models with a price range of \$1,195 to \$1,795, and eight Diana models with a price range of \$1,595 to \$2,295. Two models are added in the Series A line, a four-door sedan special at \$1,545, and a collapsible top cabriolet roadster at \$1,795.

The line is featured by new color combinations, selection of which is offered in a much wider range than formerly. Royal models in each of the lines carry special equipment and upholstery in addition to wide range of colors. Hardware is of Butler silver. Mechanically the cars continue substantially the same as last year except for detail improvements.

Overland Output 108,788 in First Five Months

TOLEDO, June 28—Willys-Overland production in May totaled 27,569, bringing the total for the first five months of 1927 to 108,788. The May output was 64 per cent above that for the same month in 1926, and the five months' output is a gain of 28 per cent. Sales of Whippet cars in the first year of their manufacture totaled 110,000.

Ford Plans Smaller Plane

DETROIT, June 28—Ford Motor Co. will build a smaller type of all-metal plane at its Dearborn aviation division intended for use on small passenger lines. The new plane will be powered with a Wright Whirlwind 200 hp. engine.

P. A. Peterson

ROCKFORD, June 27—The death of P. A. Peterson, president of the Rockford Drop Forge Co., has been announced by the company.

Ruthenburg Named Assistant to Seiler

Will Direct Building of New
Pontiac Plant—Offices
to Be Moved

DETROIT, June 25—With the completion of the new Yellow Truck & Coach Mfg. Co. plant, at Pontiac, the executive offices now located in Chicago will be moved to Pontiac. Officials of the production and sales departments will also move their headquarters to the Pontiac offices when they are completed.

Louis E. Ruthenburg, general manager of the Yellow Sleeve Valve Engine Works in East Moline, which is to be removed to the new Yellow Coach & Mfg. Co. plant in Pontiac, has been appointed assistant to the president of Yellow Coach and will be in charge of the \$1,000,000 plant being erected at Pontiac. Announcement of his advancement was made this week at a farewell dinner in Mr. Ruthenburg's honor at the Short Hills Country Club, Moline, at which employees of the Yellow Sleeve Valve paid fine tribute to the general manager.

Mr. Ruthenburg, during the dinner, stated there was a possibility that the plant in East Moline may be converted into an assembly unit for one of the General Motors automobiles, probably the Chevrolet or Pontiac. The Yellow Sleeve Valve will continue in operation here at least six months longer, it was stated, with Earl Taylor, now assistant to Mr. Ruthenburg, in charge. Seventy-five guests, including many industrial leaders of the quad-cities, attended the dinner at which Harry Jansen, secretary of the Tri-City Manufacturers Association, was toastmaster.

Grand Trunk to Extend Yards

DETROIT, June 25—As a means of providing transportation facilities for the new Yellow Truck & Coach Mfg. Co. plant which will be built at Pontiac, the Grand Trunk Railroad plans to spend \$350,000 developing additional railroad yards at Pontiac.

Used Rubber Sales Mount

AKRON, June 27—Sales of the Akron Rubber Reclaiming Co. in the first five months of 1927 were valued at \$636,803, a 55 per cent increase over 1926. Net profit in this period was \$83,972. Additional equipment will be installed at the Barberton plant to bring production to 30 tons daily.

Defense Highway Ready

BALTIMORE, June 29—The new Defense Highway, which has been constructed through Maryland, connecting Annapolis with Washington by a route of only 28 miles, will be dedicated on July 16 with elaborate services to be held at Priest's Bridge.

Boston Investigates Cooperative Junking

Dealers Association to Study
Possibilities of Economic
Car Scrapping

BOSTON, June 27—Boston automobile dealers are now evincing interest in the junking of automobiles as planned by dealers in Milwaukee, Kansas City, Jacksonville and other places reported in *Automotive Industries* within the past few weeks. The Boston Globe reprinted the story commenting upon its possibilities here.

Fred Rees, of the Boston Overland Company, said: "The idea seems a sensible one and the Boston dealers, having a strong association, could form a corporation to do this 100 per cent. By 100 per cent I mean not alone taking a lot of cars and selecting various parts leaving the rest to take up space, but to melt down the metal and then sell it back to the automotive manufacturers.

"It certainly does seem a terrible economic waste to think that we take ore from the earth, fashion it into bolts, nuts, etc., then toss these aside on vacant lots, junk heaps, and let them rust themselves out instead of being remelted. We should take a leaf out of the lesson learned in the rubber and tire fields where we cooperated with Secretary Hoover and brought down the prices. If junkmen can make a profit from us why cannot we?" Other dealers also agreed the plan might be worth trying.

Secretary to Get Data

Secretary Chester I. Campbell, of the Boston Automobile Dealers Association, says that when he goes to Chicago in July to attend the annual conference of automobile show managers, he intends to go to Milwaukee, and possibly Kansas City, to get first hand information from the dealers on how the plan is working out. Also he has written to the members of the show managers organization to gather whatever details they can for him between now and the meeting. Because of the large number of dealers in and around Boston the Windsor plan does not appeal to them.

Salem Books Stock Car Race

BOSTON, June 25—A new corporation is being formed here to be called the Rockingham Speedway, Inc., which has taken an option on the race track at Salem, N. H. New York men are backing it and they will have direct charge of the races to be run there July 4. Jack Le Cain will manage the details in connection with the drivers.

The program calls for a stock car race at 100 miles, and a 200 mile event for the fast cars. Le Cain stated yesterday that he expects to have a good entry list for the stock car event.

Canadian Production 1,206,929 Since 1904

DETROIT, June 25—According to R. H. Coats, Federal statistician for the Dominion of Canada, the Dominion has produced a total of 1,206,929 automobiles since the industry started in 1904. Value of the output is estimated at \$885,667,897. Canadian branches of American car producers have built practically all of the cars in this total.

Auburn Net Shows \$300,000 Increase

CHICAGO, June 27—Net income of Auburn Automobile Co. for the six months ended May 31, 1927, was \$865,869 after charges and Federal taxes. This compares with net of \$560,848 for the six months ended June 30, 1926.

The balance sheet as of May 31, 1927, shows total assets of \$7,691,927. Cash totaled \$525,136, certificates of deposit \$365,000, time drafts and bank acceptances \$43,863, demand loans \$1,075,000, drafts on customers \$1,107,097, notes and accounts receivable \$1,384,341, inventory \$1,830,460, good will \$634,027.

Liabilities included accounts payable of \$878,777, accrued wages, salaries and commissions \$28,176, accrued state and local taxes \$48,929, excise tax payable \$48,351, sundry creditors \$50,646, Federal income tax reserves \$243,384, gold notes \$1,100,000. Surplus totaled \$2,956,199.

The increase in capital stock from 120,000 par \$25 shares to 500,000 no par shares was voted.

Packard Net \$9,023,325 for Nine Months' Period

DETROIT, June 27—Packard Motor Car Co. reports net profit for the nine months ended May 31, 1927, as \$9,023,325, comparing with \$13,529,640 in the corresponding period last year. Net profit for the quarter ended May 31 was \$3,114,287, comparing with \$2,073,563 in the preceding quarter and with \$5,527,282 in the corresponding quarter last year.

The consolidated balance sheet as of May 31, 1927 shows cash or marketable securities of \$16,747,809, current assets of \$28,091,674, and current liabilities of \$5,839,745, comparing with \$18,363,493; \$32,873,273, and \$6,878,615 respectively on May 31, 1926.

Velie Holds Increase

MOLINE, June 27—Velie Motors Corp. shipments in the first five months of 1927 were 27 per cent over those of the same months in 1926 and June figures indicate that this percentage will be maintained.

Farm Gains Shown by Equipment Census

Tractor Manufacture Increases
\$20,000,000—Buggies and
Wagons Lose Ground

WASHINGTON, June 30—Farm equipment manufactured in the United States during 1926 totaled \$461,399,528, an increase of 17.8 per cent over 1925 and 42.7 per cent over 1924, according to annual census of manufacturers just announced by the U. S. Census Bureau.

Of this total gasoline tractors accounted for \$145,912,489 in 1926; \$121,050,374 in 1925, and \$82,497,841 in 1924. The figures show that the number of farm tractors manufactured in the United States increased from 120,643 in 1924, to 167,553 in 1925 and 181,995 in 1926. There were 839 manufacturers engaged in the making of implements in 1926, compared with 1011 in 1925.

The increasing use of automobiles and trucks is reflected in a material decrease in the sale of buggies and farm wagons. The figures show that in 1926 there were manufactured 74,693 farm wagons, compared with 108,477 manufactured in 1925. Buggies decreased from 20,486 in 1925 to 8854 in 1926.

Ships Train of Tractors

RACINE, WIS., June 25—One of the largest single shipments of tractors and other agricultural machinery in the history of Wisconsin left the plant of the J. I. Case Threshing Machine Co. for South Dakota. Arrival at Watertown, S. D., was timed so that the annual state conference of Case distributors and dealers was able to welcome the shipment with special ceremony. The train, a half mile long, bore huge banners with the inscription: "Greater Prosperity for South Dakota Farmers!"

Two Bay State Companies to Sell and Fly Planes

SPRINGFIELD, MASS., June 27—Two new companies have been incorporated here to engage in the aviation industry. One is the Springfield Air Lines, Inc., which is to act as distributor for the Swallow Airplane Mfg. Co. of Wichita, Kan., and will also conduct a transport service.

The other concern is the Massachusetts Airways Corp., which is chartered to manufacture and sell airplanes and parts and also conduct an airplane transport service. This company will fly and sell a machine of another make than the Swallow, will appoint sales agencies in various New England points and will institute a passenger and freight service between Springfield and other cities in this district. Its president is Harold M. Parker, head of the H. M. Parker Co., which holds the Stutz franchise in this city.

Men of the Industry and What They Are Doing

Graham is Named Manager of A.E.A. Parts Division

M. D. "Doc" Graham has been appointed manager of the service parts division of the Automotive Equipment Association Greater Market Development and will assume his new duties immediately. The appointment is in the nature of a promotion and is in recognition of his good work as zone manager.

With this appointment, the executive personnel of the Greater Market Development Bureau is now complete, declared Harry G. Moock, managing director.

Mr. Graham's experience includes work as service manager with a car manufacturer, work in the sales organization of a parts manufacturer, sales manager for a jobber, and handling service parts as sales manager of a parts manufacturer. Previous to joining the A. E. A. as zone manager he was sales manager of Mosler Metal Products Co.

L. R. Wilder Resigns

L. R. Wilder has resigned as president of the American Brown Boveri Electric Corp., the resignation to be effective July 1, on which date he will become chairman of the advisory committee of the ship-building division of the corporation. M. L. Sindeband, a vice-president, has been placed in charge of electrical operations.

Welding Men in Changes

Changes in the sales and service department of Lincoln Electric Co. have resulted in L. P. Henderson being transferred to Chicago in charge of welder service, J. E. Durstine to the welder service department in Cleveland, J. W. Shugars and R. D. Layman to Detroit, D. H. Carver to Cincinnati, and R. F. Terrill to New York.

Williams Joins Bendix

H. L. Williams, until recently field editor for Chilton Class Journal publications, has been appointed sales promotion manager for the Bendix Corp. and its subsidiary, the Bendix Brake Co., of South Bend.

Siddeley Returns Home

J. A. Siddeley, director of Siddeley-Armstrong Co., Coventry, England, with Mrs. Siddeley, has returned to England after spending some weeks studying the automotive industry in the United States and Canada.

Greene Leaves Indian

Edward J. Greene has resigned as comptroller of Indian Motorcycle Co. and has joined Frank J. Weschler, former president of Indian, who is now head of the Baldwin Chain & Mfg. Co.

Oakland President Hears Dealer Views

A. R. Glancy, president of Oakland Motor Car Co., is visiting eastern dealers and distributors with W. B. Sawyer, eastern sales manager of Oakland. Meetings are being held in main distributing cities where the plans of the company are being discussed with the men on the retail firing line. The meetings are being brought to the dealers to save them the necessity of visiting the factory at a time when they are busy. Fourteen other executives of the company are visiting dealers in other sections.

Jordan's Daughter Improved

Edward S. Jordan, president of Jordan Motor Car Co., has been commuting between Cleveland and Boston during the past month, his frequent trips there being to visit his eldest daughter, Miss Jane, who has been seriously ill. Mrs. Jordan is in Boston with her and Mr. Jordan has been a weekly visitor. The young lady is now convalescing, it is reported.

Moore Named President

Dr. Herbert Fisher Moore, professor of engineering materials at the University of Illinois, has been elected president of the American Society for Testing Materials. G. W. Thompson, chief chemist of the National Lead Co., was named first vice-president, and T. D. Lynch was elected second vice-president.

Cramer Northwest Manager

T. W. Cramer has been appointed Northwest district manager of the General Tire & Rubber Co. with headquarters in Seattle. Mr. Cramer comes from Dallas, Texas, where he served as district manager for General throughout the South. His territory now includes the entire Pacific Northwest.

Kuhlman Eastern Manager

George Kuhlman has been appointed eastern district manager for the Heil Co., making his headquarters at the New York branch in Long Island City. Mr. Kuhlman joined Heil in 1919 and in 1922 opened the Philadelphia branch. He is widely known in the eastern territory.

Romine is Appointed Hudson Sales Manager

R. T. Romine has been appointed general sales manager of Hudson Motor Car Co., according to an announcement by O. H. McCornack, vice-president in charge of sales, advertising and service. Mr. Romine has been with the Hudson organization for several years and since last autumn has served as sales manager. He is now in charge of all domestic and export sales.

Segrave Leaves Sunbeam

Major H. O. D. Segrave, holder of the world's short distance records, has severed his connection with the Sunbeam Motor Co. and will not drive in the forthcoming French Grand Prix on Montlhery circuit. He will be replaced by Louis Wagner. Captain Irving, of the Sunbeam engineering department, who was responsible for the design of the record-breaking Sunbeam sent to Florida has also severed his connection with the concern. His future plans are not announced.

Washburn in Accident

W. E. Washburn, Jr., district manager of the Raybestos Co., and president of the Automotive Booster Club of Cleveland, was severely injured June 21 in an automobile accident near Fremont, Ohio. He will be able to resume activities early in July.

Tire Cooperation Planned

LOUISVILLE, June 28—Officers and directors of the National Tire Dealers Association met in Louisville, June 24, with local committee chairmen to make arrangements for the national convention to be held here Nov. 15 to 17. Cooperation between manufacturers and dealers will be the principal topic, according to H. V. Eva, president, while the practice of selling direct to large commercial users will come in for discussion.

F. J. Fisher on Bell Board

DETROIT, June 25—Fred J. Fisher, vice-president and director of the General Motors Corporation, has been named a director of the Michigan Bell Telephone Co., succeeding Harry B. Thayer, of New York.

Increase Hydrometer Duty

WASHINGTON, June 29—A change in the duty on glass hydrometers and battery testers has been made by a United States Customs Court's decision just announced here. The former rate was 55 per cent ad valorem. The new and proper rate, the court finds, should be 65 per cent, being classed as scientific articles and dutiable under paragraph 218, act of 1922.

Drake to Quit Post as Aide to Hoover

Will Return to Active Work
in Industry, Says Former
Hupp Chief

WASHINGTON, June 30—The retirement of J. Walter Drake, since 1923 assistant secretary of commerce, from government life to private business was announced here this week by the U. S. Department of Commerce. Mr. Drake's retirement will take place probably some time in the early fall or sooner if Secretary Hoover can secure a man to fill his position, the department announces.

Up to the time Mr. Drake became assistant secretary of commerce he was chairman of the board of Hupp Motor Car Corp., of which he was one of the organizers in 1909. He was and is also widely interested in an active way in several other motor enterprises and industrial activities. He is a director in more than a score of corporations.

One of the outstanding accomplishments in which the retiring assistant secretary had active part was the establishment of an aeronautical division in the Department of Commerce with an assistant secretary as its head. He had planned to quit the government service last year but was opportunely by Secretary Hoover to remain until the air activities of the department were established.

High tribute to the retiring secretary was paid by Secretary Hoover, who characterized Mr. Drake "as a most able administrative officer with an unusual combination of legal and economic experience of the utmost value in carrying on many of the more important phases of the department's work."

As to his plans for the future Mr. Drake said that after a vacation of several months he would again assume an active part in his various interests connected with the automotive industry. In filling Mr. Drake's position Secretary Hoover declared that he would, if possible, select a man from the automotive industry, "provided one of sufficient calibre could be found who was willing to make the financial sacrifice."

Fisher Site Cleared

DETROIT, June 27—Ground for the mammoth new Fisher building to be erected on Grand Boulevard, opposite the General Motors Building, has been cleared of apartment buildings and work on the new structure will start soon.

Perrine Takes New Plant

BOSTON, June 27—Perrine Quality Products Corp., manufacturer of Perrine storage batteries, will move shortly from its plant here to the plant formerly occupied by the Metz Auto Co. in Waltham, Mass.



J. Walter Drake

Who is retiring as U. S. Assistant Secretary of Commerce to resume activity in industry

Willys N.Y. Branch Takes Stearns Sale

NEW YORK, June 28—Stearns-Knight automobiles will be sold in New York beginning July 1, at the branch of Willys-Overland, Inc., in a special showroom at 216 West Fifty-seventh St., succeeding the Stearns Automobile Co. of New York, which handled the line for a number of years. H. J. Leonard, president of F. B. Stearns Co., was in town this week, making final arrangements. Stearns sales in several other cities also will be handled with Willys-Knight, it is reported.

The Stearns-Knight models in their new location will be shown in conjunction with a complete range of Willys-Knight cars. The branch will operate as a unit entirely independent of the main Willys-Overland salesroom at Fiftieth St. and Broadway but will be under the supervision of W. H. Maston, who is in charge of the New York branch of Willys-Overland, Inc.

Further Selling Brings Rubber Prices to 35½

NEW YORK, June 29—Another outburst of selling on the rubber exchange this week resulted in declines bringing the July position to around 35½ cents. This weakness was in the face of an announcement from the House of Commons, that the British Government had not considered altering the basis of the restriction scheme. Other items of bullish news were also ignored, including a substantial drop in London stocks and an estimate by Henderson Helm & Co. that consumption of crude rubber in the United States in June would be about 33,000 tons, against arrivals of 27,500 tons.

Germany to Absorb 700,000 More Cars

Registration of 1,000,000 Cars
in Four to Five Years
is Predicted

PARIS, June 21 (by mail)—Within four or five years Germany will have one million automobiles and will stand second in importance in Europe, declares Charles G. Jerosch, travelling representative in Europe for the Good-year Tire & Rubber Co.

With a population of approximately 63,000,000, Germany at present possesses only 318,000 automobiles, but the growth which will rapidly carry her up to the million mark already has begun. Despite all reports to the contrary, the country is prosperous and active and the demand for cars is strong. With a few exceptions German manufacturers do not appear to have realized the possibilities which lie ahead of them, and their market is one which will be profitable to foreign makers. The cheaper classes of American cars are selling well and will continue to sell on an increasing scale. Among the European makers who have realized the importance of the market are Citroen who has a big assembly plant at Cologne, and the Italian Fiat.

While the passenger car field is full of promise for American manufacturers, the German makers hold the market for trucks and commercial vehicles of all classes. Import duties at present are 150 marks per 100 kilogrammes, but will gradually be reduced until in July, 1928, they will stand at 75 francs per 100 kilogrammes.

Associations Urge Survey for Farmers

WASHINGTON, June 29—Scientific research is one of the outstanding needs of the American farmer, Secretary of Agriculture Jardine was told here this week by a committee representing 12 national organizations, including the National Automobile Chamber of Commerce. Included in the organizations which asked the secretary to use his offices to further such research are the canners, fertilizer, dairy, commission merchants, sugar beet and tanners associations.

What the organizations want is a survey which will show the farmer how to eliminate waste and loss in every phase of production and marketing. A high percentage of their waste is in marketing of their products by transportation facilities, totally inadequate to their needs and greatly duplicated, it was declared.

Representatives of the National Automobile Chamber of Commerce expressed a belief that millions of dollars could be saved farmers annually through better transportation facilities, roads, etc.

C. & A. Plans Buses Crossing Missouri

Would Join St. Louis and Kansas City—Carriers Need Buses, Says Official

KANSAS CITY, June 25—The Chicago & Alton Railroad is planning to operate a system of gas-electric buses between Kansas City and St. Louis, according to an announcement here by S. G. Lutz, vice-president in charge of traffic.

Mr. Lutz, in his announcement, said the railroad had spent large sums of money in acquiring the finest railway passenger equipment possible, in an effort to stimulate rail passenger travel, but the results have not been entirely satisfactory. "It has come to a place," Mr. Lutz said, "where it is an economic necessity for steam carriers to enter the highway motor passenger field."

Mr. Lutz was in Kansas City to confer with C. R. Benton, the company's western passenger agent. In connection with his announcement of the company's plans to enter the bus field in Missouri, Mr. Lutz pointed out the successful operation of the company's bus line from Greenville, Ill., to St. Louis. "The Kansas City-St. Louis line will link up with our St. Louis-Chicago line," he said. "We now operate the line from St. Louis to Greenville but have an application pending with the Illinois public service commission to extend the line into Chicago. When this is done, and the Kansas City-St. Louis line is started it will give the public a through bus line to Chicago."

Mr. Lutz said he believes the railroads are better equipped than any other organization to handle bus lines.

No date for the establishment of the Kansas City-St. Louis line by the C. & A. was set by Mr. Lutz. The last link in the state highway between Kansas City and St. Louis soon will be completed.

Operators Oppose Seaboard Bus Plea

RALEIGH, N. C., June 27—The Carolina Motor Carriers Association argued here before the North Carolina Corporation Commission a motion to deny the Seaboard Air Line Railway authority to operate a motor bus line between Rutherfordton and Asheville in competition with established privately owned bus lines. John W. Hester, of Oxford, N. C., secretary and attorney for the association, and Col. T. L. Kirkpatrick, of Charlotte, N. C., special counsel, made the principal arguments for the bus owners, who insisted that this effort would mark the beginning of the "killing" of privately owned bus lines by the large railways.

Mr. Hester said "thus far there has been only cooperation and good feeling between the bus operators and the rail-

Two-Car Family Day Now Near, Says Rice

DETROIT, June 25—The two-car family is the keynote of future sales increases, H. H. Rice, of General Motors Corp. and chairman of the taxation committee of the National Automobile Chamber of Commerce, declared at the annual meeting of the N. A. C. C. advertising managers' meeting.

"An improved product and a wider range of service gives you men more to sell today than at any time in the industry. The life of the American family is based on the use of the automobile, with the result that the two, three and four-car family will be typical tomorrow, a market never dreamed of 10 years ago."

Frederick Dickinson, advertising manager of Hupp Motor Car Corp., presided at the sessions in the absence of Edward S. Jordan, president of the Jordan Motor Car Co., who was called east by the illness of his daughter.

ways. The railroads are indispensable and I am the last man to harass them, but to give the Seaboard the privilege of paralleling an existing motor carrier line would thereby destroy the sense of security and integrity of every bus line in North Carolina." He suggested the commission require the Seaboard and motor carriers to "take care of each other's business."

Navy Orders Additional Pratt & Whitney Engines

HARTFORD, CONN., June 25—An order for 39 more Wasp nine-cylinder airplane engines has been placed by the Navy Department with the Pratt & Whitney Aircraft Corp. This order totals \$377,085 and with orders previously placed brings the total number of engines up to 250. Deliveries are to be made this summer. These nine-cylinder Wasp engines are to be placed in Corsair planes which will be stationed on battleships for scouting purposes. The engines are of 410 hp.

A Corsair plane of the type that has established many records recently flew from Washington to Brainard field here in 2 hours and 55 minutes.

Gets Canadian Contract

MONTREAL, June 25—The Canadian Car & Foundry Co. Ltd., has obtained an important contract from General Motors Co. of Canada, Ltd., for the manufacture of automobile frames for the Chevrolet car. This is a new line for the Canadian Car & Foundry.

32,595 School Buses in Use During 1926

Report Shows 872,745 Children Carried in U. S. Over 327,243 Routes

RALEIGH, N. C., June 27—North Carolina leads all states of the union in the mileage of its lines operated by school buses, these routes covering 51,869 miles, according to a report made here by the North Carolina department of public instruction. The mileage of New York state, second in this respect, is 20,000 miles.

Eighty thousand school children were transported daily between school and home in the school buses of North Carolina, the announcement said, at a total cost for the school year of \$1,302,720. The respective totals for each of the states of Indiana and Ohio were larger than those of this state, which stood third among the states of the union in this respect.

The school systems of the nation spent \$23,000,000 during the recently closed school year in the transportation of 872,745 school children in 32,595 motor buses over 327,243 routes, said the statement by the North Carolina department of public instruction.

Seaplane Line to Connect Mackinac and Lake Ports

DETROIT, June 27—The Strasburg Flying Service of Detroit will inaugurate a seaplane passenger line linking Detroit, Mackinac Island and Chicago, according to Paul Strasburg, head of the organization.

Three seaplanes of the improved Curtiss Seagull type, powered with 210 hp. engines, with a carrying capacity for five persons, including the pilot, will go into service July 5. At first no exact schedule will be adhered to, this probably not to be worked out until Aug. 1.

A single passage from Detroit to Mackinac will be \$82.50 and from Chicago to Mackinac \$108; the round trip from Detroit to Mackinac \$150 and \$200 from Chicago, with one-day stop-over privilege.

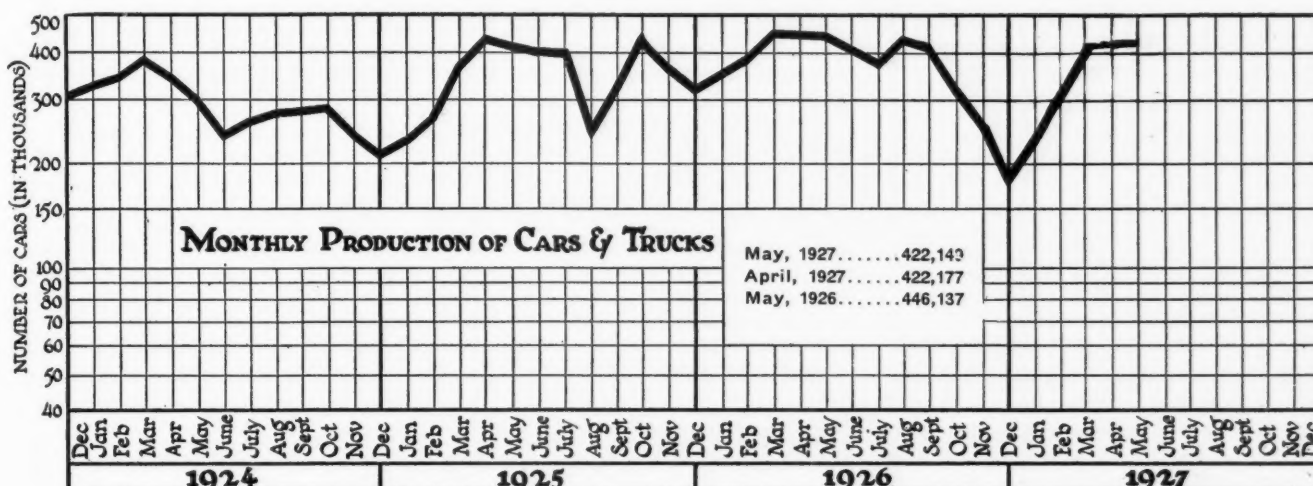
Airline Reports Gains

DETROIT, June 25—The Stout Air Service reports a big gain in business on its air line between Detroit and Grand Rapids. In May 250 passengers were carried, a gain of 45 per cent over the previous month.

N. C. Sales Drop One-Third

CHARLOTTE, N. C., June 27—Motor car registrations in May in North Carolina totaled 3761, as compared with 5680 in the corresponding period of last year, according to figures made public at the offices of the Carolina Motor Club. Sales of motor trucks numbered 200, as compared with 491 in May, 1926, it was stated.

May Production Holds April Level



Distributors Double July Essex Orders

DETROIT, June 25—Hudson and Essex distributors and dealers have ordered the entire July schedule of more than 32,000 Essex cars, according to Hudson Motor Car Co. The orders indicate a rather even distribution of prosperity over the country. Of the larger cities New York ordered 2000 Essex for July or twice as many as for July last year; Boston, 1600 or twice last year's; Chicago, Detroit and Philadelphia, each 1500, or twice last year's number; and Minneapolis, 1000 or two and a half times a year ago.

Of important centers asking for less than 1000 cars, Cleveland ordered two and a half times last year's total; Des Moines, three and a half times; Seattle, four times; Denver and San Francisco, three times; Kansas City, Salt Lake City and Atlanta, two and a half times; St. Louis and Wichita, double.

North Carolina Reports Drop in Car Shipments

CHARLOTTE, N. C., June 27—Shipments of gasoline and motor oil received at Charlotte in the first five months of this year totaled 1455 carloads, or an increase of 201 carloads over the total for the same period of last year, according to an announcement made by the Charlotte Shippers & Manufacturers Association. Forwarded shipments of these commodities increased 37 carloads to 192 carloads.

Both received and forwarded shipments of automobiles and parts here fell off sharply, the statistics showed. A total of 1483 carloads was received in those five months, as compared with 2075 carloads in the corresponding months of 1926. Forwarded shipments at Charlotte were 1086 carloads, or a decrease of 865 carloads from the total for the five months of 1926. While the loss in received shipments was shared by all automobile dealers and distribu-

tors to some extent, the losses were regarded particularly as reflecting the rate of production at the Charlotte branch of Ford Motor Co.

Cabriolet Roadster Six Added by Dodge at \$1,595

DETROIT, June 27—Dodge Brothers, Inc., has added a cabriolet roadster listing at \$1,595, to its six-cylinder line. The front part of the top is built integral with the windshield pillars. The back part only is lowered, the break being made at the rear door pillars. Advantages claimed for this design are increased rigidity and strength of the top. The new model is equipped with a rumble seat, is upholstered throughout in leather and incorporates a golf club compartment.

Equipment includes windshield wiper, rear traffic signal, front and rear bumpers, Motometer, rear view mirror, eight-day clock and electric dash gasoline gage. If wire wheels are purchased an extra wheel is furnished.

Universal Starts Plant

OSHKOSH, WIS., June 25—The Universal Motor Co. has started construction of its new plant and office building which will not only greatly increase its capacity but enlarge its line of industrial and marine engines by the addition of larger types. The main shop will be 150 x 378 ft., with an attached boiler room 40 x 50 ft. The investment will be upwards of \$100,000. E. H. Fahrney is president of the company.

Julius Schuengel

MILWAUKEE, June 27—Julius Schuengel, of the Geuder, Paeschke & Frey Co., Milwaukee, died June 22 after a long illness. He was born in Milwaukee, 46 years ago, and entered the Geuder service when 16 years old, being steadily promoted until becoming general superintendent ten years ago.

Murray Corporation Buys Jenks & Muir

DETROIT, June 25—Murray Corp. of America has bought the Jenks & Muir Mfg. Co., the industry's second largest manufacturer of springs and other materials for automobile upholstery. Christopher E. Coda, who has been vice-president and general manager for a number of years, will be in charge of operations as president. The business will be continued separately, and the same standards of quality and service which have been responsible for building it to its present proportion will be maintained, according to W. R. Wilson, president of Murray.

Harry E. Dey

PHILADELPHIA, June 25—In the passing of Harry E. Dey, the industry loses another of its real pioneers. As early as 1895 Mr. Dey designed and built electric vehicles, the patents on which were taken over by the United States Automobile Co., of Attleboro, Mass. In subsequent years he worked with both the gasoline engine and the electric motor. A few years ago he was associated with Dr. Steinmetz of General Electric fame in the development of the Steinmetz electric delivery wagons which incorporated refinements of features which characterized Mr. Dey's earlier efforts, notably the electric motor with revolving field armature.

L. M. Turner

MILWAUKEE, June 27—Leland Turner, former president of the Turner Mfg. Co., and well-known inventor in the gas engine field, died at Waterloo, Iowa, following an operation. He was 54 years of age and a native of Milwaukee, where interment was made. For the past 20 years Mr. Turner was general manager of the Western Malleable & Grey Iron Co., Waterloo.

A.E.A. Enthusiastic for Marketing Plan

General Support for Moock Proposals Believed Indi- cating Its Adoption

PORTLAND, ORE., June 29—Presentation of the Greater Market Development plan, by Harry G. Moock, was the high spot of interest for the 250 delegates in session here at the summer convention of the Automotive Equipment Association. Enthusiastic reception of the plan, and the widespread appreciation of its broad scope, were believed to foreshadow the unanimous pledge of support for it when the plan comes before the gathering for detailed discussion at the last session. The plan provides for active and aggressive work by a corps of marketing experts headed by Mr. Moock in the advancement of the following objectives:

1. Constantly keeping before the trade and the public a realization of the magnitude, scope and importance of the after-market.
2. The establishment of all automotive retailers on a basis of permanent profit, through the sale of accessories, parts and service.
3. The necessity of maintaining the position of the automotive industry, in competition with all other industries, in the race for the "consumer dollar."
4. Distribution of accessories, service parts and shop equipment through jobbers who should be adequately organized to justify this method of distribution as best serving all concerned.
5. A semi-annual inspection of the safety factors of all automobiles by authorized service stations, thereby reducing accidents and the loss of lives.
6. The establishment of fundamental service methods and practices, through an automotive service council, composed of delegates from interested national trade associations.
7. Organized campaigns to develop and secure competitive seasonable business.
8. Certified retailers, properly selected and designated as having proved worthy to enjoy the full confidence and patronage of the public.
9. Information for the use of salesmen—both jobber and retailer—which will enable them to develop better selling methods.
10. Close contact and cooperation with all allied trade groups, including manufacturers of cars, trucks and buses, and with the national associations representing such groups.

High Colored Cars to Reduce Accidents

MILWAUKEE, June 25—In the interest of safety and with a view toward minimizing grade crossing collisions with automobiles, the Chicago, North Shore & Milwaukee electric line has decided to operate trains with the first coach painted a bright yellow to make it conspicuous to motorists. The standard color of North Shore coaches is dark green. Safety engineers of the line say the yellow cars will be more visible at night in the illumination of automobile headlights and also on dark days. The Milwaukee Electric Railway & Light Co. is gradually supplanting its coaches with cars painted a bright yellow on the top half and a bright orange on the lower band.

Motor Fatalities Gain 13% in 1927

NEW YORK, June 27—Motor fatalities in cities of more than 100,000 population totaled 475 in May against 468 in April and 461 in May, 1926, according to the National Automobile Chamber of Commerce. For the first five months of 1927, the total was 2136, a gain of 13 per cent over the first five months of 1925.

Citing the record of the Bronx River Parkway, in Westchester County, New York, as evidence of safe traffic created by modern highway construction, Alvan Macauley, chairman of the street traffic committee of the chamber, points to engineering as the next forward step in the relief of congestion.

National Machinery and Chambersburg Join Sales

PHILADELPHIA, June 30—Sales forces of the National Machinery Co., Tiffin, Ohio, and of the Chambersburg Engineering Co., Chambersburg, Pa.; have been consolidated so that industrial executives may be offered a complete service on related equipment. National Machinery manufactures forging machines and a line of bolt and nut machinery, and Chambersburg manufactures forging and pressing machinery. The two lines augment each other, overlapping slightly on the forging equipment. Sales offices will be maintained at Tiffin, Chambersburg, New York, Chicago and Detroit.

Aside from the consolidation of the sales forces, the two companies will remain distinct and separate organizations, there being no change in ownership, management or personnel.

Financial Notes

Whitney Mfg. Co., chain and machinery manufacturers, declared a stock dividend of 1000 per cent. The capital has been increased from \$150,000 to \$1,500,000. The stock is closely held by the Whitney interests. The business was established by C. E. Whitney, son of one of the founders of the Pratt & Whitney Co., and originally engaged in the manufacture of bicycle chains.

Studebaker Corp. net profits after taxes in April and May were \$3,600,000, which was in excess of total profits for the first three months of the year, according to A. R. Erskine, president. For the first five months this year, Studebaker earned \$7,000,000 for dividend, equal to \$3.50 a share on 1,875,000 shares of common stock.

Doehler Die Casting Co. declared an initial quarterly dividend of 87½ cents a share on the new 50 per cent paid \$7 no par preference stock, and the regular quarterly of 1¼ per cent on the preferred stock, both payable July 1 to stock of record June 20.

Fisher Body Ohio Corp. stockholders have approved the offer of General Motors Corp. to exchange their stock on a basis of one share of Fisher Body Ohio for two and one-half shares of General Motors. The Ohio company will formally pass into possession of General Motors on July 1.

Western Auto Supply Co. of Kansas City declared the regular quarterly dividend of 50 cents a share on the participating preference stock, payable July 1 to stock of record June 20.

Canadian S K F Co., Ltd., has increased its capitalization from \$200,000 to \$400,000.

Wood Says Philippines Can Meet Rubber Needs

RAPID CITY, S. D., June 29—A belief that the Philippines can grow all the rubber needed by the automobile industry of the United States was expressed in an interview between the governor general of the Philippines, Major General Leonard Wood and President Coolidge, on the occasion of the former's visit here this week.

Discussing the rubber situation General Wood declared that he looked for rubber to be the favorite crop of the islands. "Rubber grown there is of high quality and it is not necessary to work long hours in producing it. It is essential, however, to interest Americans with large capital, capable of carrying on for four or five years until the plantations start producing. I personally favor the granting of leases on rubber lands up to 50,000 acres for a period of 25 years, although those figures can be lowered."

Enoch Peterson

CHICAGO, June 27—The death of Enoch Peterson, president of the Wm. D. Gibson Co., this city, has been announced by the company.

Steel Market Easy as Demand Declines

Sales to Industry in First Half
Exceeds Former Year—
Alloys Gain

NEW YORK, June 30—With the record of the year's first half before it, the steel industry recognizes that it has fared considerably better than have most of the basic industries and that even a sharper recession in the demand than that which is actually in evidence would signify nothing more than a realignment with business conditions as a whole. It is also admitted that automotive demand for steel, during the first six months of the year, compared more than favorably with the record for the corresponding period of last year.

No more eloquent proof of the steadily gaining importance of the automotive industries as steel consumers can be found than a recent report of the American Iron & Steel Institute, dealing with so typical a class of automotive steels as alloy steels. Last year's production of alloy steels was 2,463,414 tons. In 1913, alloy steel production totaled 714,357 tons, and since then, keeping perfect step with the growth in passenger motor car output, alloy steel production has mounted steadily.

Taking the market as a whole, the price situation is easy. With steel bars down to 1.85 cents, Pittsburgh, prices for cold-finished bars have sagged to 2.35 to 2.40 cents. Concessions of \$1 to \$2 per ton from prevailing quotations for alloy bars are reported to have been made on attractive business. Sheet and strip-steel producers insist that no new business is being booked by them except at the higher prices recently announced but they admit that the volume of new business so far is rather light.

Pig Iron—The markets for foundry and malleable iron are generally quiet and easy on an \$18 Valley furnace basis. Following a buying spurt in Cleveland, much of the iron contracted for going to automotive foundries, things there also have quieted down.

Aluminum—Although automotive demand for primary metal is light, there is no resale metal on the market and the domestic producer controls the price situation. The market for secondary metal is easy to weak.

Copper—Slightly more consuming interest is in evidence. Further price reductions have been announced by the leading brass rolling mill interest.

Tin—With the arrival this week of considerable tonnages of Straits tin from London and Singapore and Banka from Rotterdam, the premium on spot tin is vanishing.

Lead—Fair storage battery demand is noted. Market steady.

Zinc—Demand is moderate and the market easy.

Gasoline Continues at Low Price Level

WASHINGTON, June 30—Irrespective of the price that the motorist pays for his gasoline, that commodity during the past five years has maintained a lower level than almost any other commodity, says a statement just issued by the Bureau of Mines. The price of tankwagon gasoline, for example, early in 1926, was but little more than the average price for 1913, compared with the calculated price of all commodities combined of 50 per cent higher.

The price of gasoline was highest in 1920 when tankwagon prices were 31 cents a gallon in New York. The period from 1921 to 1924, inclusive, witnessed a general reduction in gasoline prices throughout the country. In 1925 the average tankwagon price was below 20 cents per gallon.

Hardwood Demand Better Than Normal

ATLANTA, June 30—The end of June finds the demand for hardwood products in the automotive field still better than normal, according to wholesalers and manufacturers in the Atlanta district, who state that the present inquiry is sufficiently active also to indicate that this business will continue better than normal for some weeks to come. Automotive manufacturers are not placing any sizeable orders for their advance needs due to the high prices caused by lack of production in the flooded districts of the lower Mississippi Valley, but they are buying very steadily for current requirements, and have been doing so now for the past three months.

The primary call is for the thicker dimensions of white ash in the better grades, with a fair call for the second best grades, and a good call reported also for the best grades of maple and elm in the thicker dimensions. Prices, however, continue very high, the highest in fact that they have been in over two years.

Delco-Remy Opens Unit

ANDERSON, IND., June 27—Delco-Remy Corp. will celebrate this week the opening of its seventh factory, which will be known as plant No. 2. This new factory, which is to be placed in operation after the celebration, will add approximately 100,000 sq. ft. of floor space to the present facilities and will be devoted entirely to the manufacture of distributors.

Retail Tire Sales Show Improvement

Factory Operations Continue
to Exceed 1926 Pace—Re-
duction Seen in July

AKRON, June 27—Stimulated by warmer weather and a consequent increase in motoring, retail tire sales have gained considerably in the past few weeks, according to advices received by Akron manufacturers from dealers all over the country. The cool weather and backward spring had retarded consumer business in many northern states.

Tire production is inclined to be somewhat "spotty," although the total volume output is now from 15 to 20 per cent above that at this time last year. Indications are that operations will be slightly curtailed in the Akron district during July, until consumption and production are closer together.

Goodyear Tire & Rubber Co. has been forging ahead with new high production records. Current output of factories at Akron, in California and Canada, is between 60,000 and 65,000 tires a day. Approximately 45,000 tires a day, the largest number in its history, are being manufactured by Firestone Tire & Rubber Co. Sales of the B. F. Goodrich Co. during the first half have exceeded the same period last year by nearly 50 per cent. Production at the Seiberling Rubber Co. plant continues at capacity. General Tire & Rubber Co. has announced a new plan for selling tires on credit.

Tire Demand Keeps Cotton Mills Busy

ATLANTA, June 30—Though sales conditions in the automotive industry have not been as active the past six months as they have been in recent years for this same period, reports from mills manufacturing tire fabric are to the effect that this industry experienced a record business the first half of the year, and enters the second half with all of the plants operating on a capacity basis, many running day and night. Furthermore, all of the larger companies report they are sold ahead for capacity production for some time to come, and that indications are production will continue on this same basis at least until next fall.

To Move Sales Offices

COLUMBUS, June 27—General sales offices of the Columbus McKinnon Chain Co. will be removed about July 15 to Tonawanda, N. Y., where the company's large electric welding plant is located. The factory will be continued here as a manufacturing unit. Moving the offices will enable the company to give more prompt service on the majority of its products.

Industry to Attend Railroad Meeting

DETROIT, June 25—The National Automobile Chamber of Commerce will be represented before the official classification committee of the railroads at its meeting in July, when that committee will determine the freight classification to apply on a number of automobile parts, it was decided at the meeting of the N. A. C. C. traffic manager members at their meeting here this week.

Reports on general freight rate investigation and the final hearings in the iron and steel division were submitted by K. A. Moore, assistant traffic manager, who has been attending the hearings before the Interstate Commerce Commission.

Illinois Reconsiders and Passes Gas Tax Bill

SPRINGFIELD, ILL., June 25—Illinois this week joined the gas-taxing states, the Senate passing the two-cent tax measure, 30 to 19, after the bill had been defeated two days previous by a 25 to 22 vote, lacking just one vote of adoption at that time. The tax is effective Aug. 1.

Cook county delegates attacked the measure as another evidence of the fact that Chicago should be granted home rule, the members claiming that downstate was loading the burden of a gas tax on them while the fund went to improve roads outside the county. The revenues derived from the tax, under the administration plan, will go toward completing the state-wide paved highway program and its sponsors pleaded for support on the basis that adoption of the tax measure would bring completion of the highway system 20 years earlier than the present status of the bond issue would permit. The state had voted \$160,000,000 bonds for paving.

American Cars First in Australian Test

WASHINGTON, June 30—Automobile dependability tests just held in Australia, covering a 1745 mile mountainous route through northern Victoria and southern South Wales, resulted in first honors to American automobile manufacturers, the U. S. Department of Commerce is informed by Thomas H. Robinson, consul at Melbourne. First and second prizes were won by American cars, third prize going to an Italian make. Forty-five other makes contested.

More British Makes Shown at Melbourne

WASHINGTON, June 30—British manufacturers are making a strong bid for the Australia automotive market, according to indications just shown as a result of the International Motor Show held at Melbourne, the U. S. Department of Commerce is informed. The report says that the noticeable feature of the exhibition was the increased number of British makes "which revealed the strong efforts British manufacturers are making to establish themselves in this market." The show ran nine days and drew 95,000 people.

Flint Prices Garages

FLINT, June 25—The Flint common council has decided to get estimates on construction costs for municipal ramp garages. Several of the aldermen are of the opinion that ramp storage garages could be built on city property in the downtown district, and their facilities rented at a nominal charge as a means of relieving the parking situation.

German Car Plants Improve Positions

WASHINGTON, June 28—The German automotive manufacturing industry is steadily improving, both financially and from an efficiency standpoint, American Consul Conger Reynolds reports to the U. S. Department of Commerce. Several companies, heretofore in financial difficulties, have pulled through and a good volume of business is reported by most of the companies.

Experts of German automotive products to the United States, however, show a considerable decline, amounting to \$33,026 the first quarter of 1927 compared with \$50,419 in the same quarter last year. Magnetos and spark-plugs totaling \$130,000 were shipped in 1926 compared with \$176,031 shipped to the U. S. in 1925.

Horn Tariff Set at 25%

WASHINGTON, June 30—A contention that automobile horns, imported into this country, should be assessed at 25 per cent instead of 40 per cent has been sustained by the United States Customs Court. The complaint was filed by the Robert Bosch Magneto Co. Inc., and the court found that such automobile signal horns should be entered classified as parts of automobiles, with the duty at 25 per cent, instead of 40 per cent ad valorem under paragraph 399, Act of 1922, as manufacturers of metal not specially provided for.

4 Companies Join N.S.P.A.

DETROIT, June 25—The National Standard Parts Association reports the addition of 4 new manufacturer members, the Irving Engineering Co. Inc., Buffalo; Ross Gear & Tool Co., Lafayette, Ind.; Richmond Piston Ring Co., Richmond, Ind., and the C. Spiro Mfg. Co., New York.

Calendar of Coming Events

SHOWS

ChicagoNov. 7-12
Exposition, Coliseum, Automotive
Equipment Association.
ChicagoJan. 28-Feb. 4
National, Coliseum, National Auto-
mobile Chamber of Commerce, in-
cluding special Shop Equipment
Exhibit.
ChicagoJan. 28-Feb. 4
Automobile Salon, Hotel Drake.
ClevelandSept. 19-23
Exposition, Public Auditorium, Na-
tional Machine Tool Builders' Ass'n.
ClevelandOct. 3-7
Exhibition, Public Auditorium,
American Electric Railway Ass'n.
ClevelandNov. 14-19
Convention Hall, National Standard
Parts Association.
ClevelandJan. 9-13
American Road Builders Associa-
tion.
LondonOct. 14-22
Olympia Passenger Car Show.
LondonNov. 17-26
Olympia Truck Show.

Los AngelesFeb. 11-18
Automobile Salon, Hotel Biltmore.
New Haven, Conn.Sept. 6-9
Machine Tool Exhibition.
New YorkNov. 27-Dec. 3
Automobile Salon, Hotel Commo-
dore.
New YorkJan. 7-14
National, Grand Central Palace,
National Automobile Chamber of
Commerce, including special Shop
Equipment Exhibit.
ParisOct. 6-16
Grand Palais.
San FranciscoFeb. 25-March 3
Automobile Salon, Hotel St. Francis.

CONVENTIONS

American Electric Railway Association,
Public Auditorium, Cleveland, Oct. 3-7
American Society for Steel Treating,
Convention Hall, Detroit, Sept. 19-24
Automotive Equipment Association,
Coliseum, Chicago, Nov. 7-12

National Association of Automobile
Show and Association Managers,
Drake Hotel, Chicago, July 23-29
National Safety Council, Stevens Hotel,
Chicago, Sept. 26-30
National Standard Parts Association,
Hotel Hollenden, Cleveland, Nov. 14-19

S. A. E. National

Chicago, November—National Transporta-
tion and Service Meeting.
Chicago, Dec. 1—Tractor Meeting.
Cleveland and Detroit, Sept. 19-22—Pro-
duction Meeting.
Detroit, Jan. 24-27—Annual Meeting.
New York, Jan. 12—Annual Dinner.

RACES

Altoona, Pa.Sept. 5
Atlantic CitySept. 24
Belgian Grand Prix, Spa-Francor-
champsJuly 9-10
British Grand Prix, Brooklands, Oct. 1
Charlotte, N. C.Oct.
DetroitSept. 10
Los AngelesNov. 27
Salem, N. H.Oct. 12
Syracuse, N. Y.Sept. 3